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Public Policymaking in Ireland: the Case of the Indigenous Interactive Media Industry, 1994-2004

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**Public policymaking in Ireland:
The case of the indigenous
interactive media industry, 1994-2004**

**by Colm Murphy, BBS, MA IMM, pgCHET
Submitted for the award of degree of Doctor of Philosophy,
Dublin Institute of Technology,
School of Media.**

Supervisors: Prof. Ellen Hazelkorn and Prof. David Jacobson

November 2010

Declaration

I certify that this thesis which I now submit for examination for the award of Doctor of Philosophy, is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Candidate

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Table of contents

List of tables and charts	V
Explanation of terms	VI
Abstract	VII
 Chapter 1: Introduction	
Overview and context.....	1
Trends in Irish enterprise development.....	5
The knowledge gap.....	7
The study questions	11
Objects of study.....	11
Thesis structure.....	12
 Chapter 2: Literature review	
Introduction/Overview.....	13
Role of a state in creating competitive industries.....	14
The public policymaking process.....	22
Review of changes in the Irish enterprise policymaking process.....	41
Gap in the Irish public policymaking literature.....	58
Conclusion.....	58
 Chapter 3: Methodology	
Introduction.....	61
How the research was conducted.....	61
Data collection methods.....	63
Chronology of research.....	77
Reflections on methodology used/approach.....	79
Self evaluation.....	81
Conclusion.....	85
 Chapter 4: Analysis of the indigenous interactive media industry and its interaction with the public policymaking process.....	86
Overview of Ireland's indigenous interactive media sector.....	86
Conclusion.....	124
 Chapter 5: Analysis of the agenda setting stage of policymaking for the indigenous interactive media industry.....	126
Early agenda setting.....	127
Putting interactive media back on agenda.....	132
National Software Director's agenda setting.....	135
Internet's growth triggers new action.....	138
Copyright and related rights act influence.....	141
TNCs spur state into telecommunications upgrade.....	146
Agile department leads to quick action.....	153
Triggering the service sector.....	157
Conclusion.....	166

Table of contents (continued)

Chapter 6: The policy formulation to evaluation stages of policymaking for the indigenous interactive media industry.....	168
Policy formulation and legitimization.....	169
Policy implementation stage.....	211
Policy evaluation.....	212
Conclusion.....	215
Chapter 7: Conclusion and implications of findings	219
Summary of findings on public policymaking in Ireland.....	230
Conclusions on study questions	236
Implications for Irish indigenous industry policy makers.....	239
Implications for policymaking analysis.....	242
Bibliography.....	249
Appendix A: Main case study protocol	260
Appendix B: Sub-unit 1 case study protocol.....	263
Appendix C: Sample letter of introduction.....	266
Appendix D: Template for Freedom of Information requests.....	267
Appendix E: Activities that qualified for the 10% tax rate.....	268
Appendix G: List of interviewees and briefings attended.....	269
Appendix H: Time line of digital media advances.....	270

List of tables and charts

	Title	Page
Table 2.1	Competing frameworks for the stages of public policymaking	34
Table 2.2	Holistic policymaking frameworks	37
Table 2.3	Complex theoretical frameworks for analysing policymaking	38
Figure 3.1	Study's methodology outline	66
Figure 4.1	Spatial distribution of the digital media industry in Ireland, 1999	91
Figure 4.2	Spatial dispersion of multimedia companies in Dublin 2000	92
Table 4.1	Dublin's digital media sector, 2000 versus 2005	89
Table 4.2	Interactive medias' contribution to Dublin's Economy, 2000	90
Table 4.3	Interactive media companies used as case studies	93
Table 4.4	Salary comparison between Ireland, America and England	101
Table 4.5	The main technical skills required by digital media companies	103
Figure 4.3	Enterprise Ireland's business development model, 2001	108
Table 5. 1	Employment and valued added in services sector, 1995	160
Figure 6.1a	Map of the policymaking structure for the Irish indigenous interactive media industry 2000	171
Figure 6.1b	The policymaking process (1999-2000) for targeting digital media and three other sectors for development	183
Figure 6.2	Initial list of internationally traded services drawn-up by PWC, March 1999, as targeting candidates	185
Figure 6.3	The process of how four sectors were selected to be targeted by the Irish state	188
Figure 6.4	PWC 1999 Chart of Sector Development Potential used to chose sectors for targeting by the Irish state.	197
Figure 6.5	Digital media growth forecast	198

List of tables and charts (condt)

	Title	
Table 6.1	Capability chain of sectors of high growth potential	200
Table 6.2	Sectors of moderate growth – capability chain.	200
Figure 7.1	The hybrid public policymaking model developed by the Irish state to develop the interactive media industry (2004)	220

Explanation of terms/abbreviations used

An Taoiseach	Prime minister of Republic of Ireland
FOIA	Ireland's Freedom of Information Act 1997 and 2003 (amendment).
Fás	State run training agency in the Republic of Ireland.
Forbairt	Irish state agency with responsibility for developing indigenous industry. It was merged to form Enterprise Ireland.
Farrell Grant Sparks (FGS)	Dublin-based accounting and business consulting firm which specialises in media.
Forfás	Irish state agency charged with co-ordinating enterprise policy.
Enterprise Ireland	Irish state agency charged with developing indigenous industry.
IDA Ireland	Irish state agency charged with attracting and then developing foreign companies.
ICC	Industrial Credit Corporation: Originally a state owned bank charged with helping to develop industry which developed a particular expertise in venture capital for emerging indigenous software companies. Sold in 2001 to Bank of Scotland.
IMF	International Monetary Fund also known as the World Bank – is known as the lender of last resort when a country cannot pay its debts.
NESC	National Economic and Social Council: Advisory body to government on social and economic issues.
PWC	PricewaterhouseCoopers private consultancy which specialises in the media industry internationally.
TNC	Transnational corporation – company with operations in multiple countries.

Abstract

Public policymaking in Ireland: The case of the indigenous interactive media industry.

A thesis submitted to the Dublin Institute of Technology, School of Media

By Colm Murphy

Ireland's economic rollercoaster, going from one of western Europe's poorest countries to one of its wealthiest during the late 1990s and early 2000s, to being bailed-out in 2010 by the EU and IMF, has attracted much international attention. But beneath this story of bust to boom to bust lies an interesting case study of how a small peripheral state attempted to develop an indigenous internationally competitive sector. This study argues that over the period the state refined its 'strategic future grabbing' policymaking process. This flexible, fast reacting, non-bureaucratic policymaking system was informed by the small agile state's American-leaning intelligence gathering network and input from private sector consultants. This research had unprecedented access to the state's enterprise policymaking documentation. This access fed into the principal research method - a case study of the Irish state's policymaking process aimed at developing its indigenous interactive media industry between 1994 and 2004. The majority of indigenous interactive media companies failed. However, those that survived were successful enough to ensure that by the end of this period, Dublin, its capital, had become one of the world's largest producers for export of interactive educational media produced by indigenous companies. The interaction of the indigenous interactive media industry with the policymaking process is also examined. This policymaking process is placed in the context of previous Irish policymaking towards indigenous enterprise development.

Chapter 1

Introduction

Overview and context

The Republic of Ireland has been on an economic rollercoaster for the past nine decades. Since its separation from Britain in 1922 until the mid-1990s it was beset by mass unemployment and mass emigration. On Europe's most western periphery and one of its smallest states, since the 1950s it pursued a model of foreign-led industrialisation. It was one of the most globalised economies in the world. Given its economic problems and its persistent failure to address them despite experimenting with different models of development, some, like O'Hearn (1989, 1998), argued Ireland was in an inescapable economic underdevelopment cycle. It had an economy dominated by branches of transnational corporations (TNCs) but would be unable to develop its own indigenous internationally competitive sectors.

But Ireland's rapid transformation in the 1990s, with its "Celtic Tiger" economy, saw it lauded internationally as the role model for the benefits of globalisation (Tansey, 1998; MacSharry and White, 2000; White, 2004; Dorgan, 2006; Fahey, Russell, Whelan, 2007). From 1990 to 2005, employment rose from 1.1 million to 1.9 million. It had the second highest per capita income in the European Union by 2006 (Dorgan, 2006). Economic growth, more jobs and rising living standards meant the resolution of the emigration problem, which had scarred Ireland for generations (Dorgan, 2006). Ireland outperformed all other OECD countries in the decade to 2005 in terms of economic growth (Dorgan, 2006).

While there is agreement on what were the principle reasons for Ireland's dramatic economic turnaround, there is a difference in the analysis of the importance of different elements (Barry, 1999; MacSharry and White, 2000; White, 2004; Dorgan, 2006; Fahey, Russell, Whelan, 2007). Recognition of the importance of the state's role in developing high tech indigenous sectors has generally ranked low in the debate behind its success in attracting high-growth TNCs like Intel, Dell, Microsoft and Boston Scientific. In contrast, Ó Riain (2000 and 2004) argued the importance of the contribution the state played in the development of the indigenous high tech sector to the creation of the Celtic Tiger. He posited that Ireland had successfully developed a "Developmental Network State" that successfully allowed it to connect local enterprise with the global informational economy. He compared it to similar achievements in Israel and Taiwan in developing their indigenous high tech sectors. There was almost full employment and mass immigration into Ireland from 2000 to 2006 (Dorgan, 2006). The investment of indigenous companies overseas in areas like food, construction materials, banking and technology was almost equal to inward investment by 2007. However, by 2008 the situation had changed with a global financial crisis. This meant there was by 2008 a sharp decline in Ireland's economic fortunes with a recession. Property prices fell over 35% in three years and there was a return to mass emigration and mass unemployment in the recession. The mounting debt crisis led to the intervention of the European Union (EU) and International Monetary Fund (IMF) in 2010 with a financial rescue package. This led to the question: was the Celtic Tiger merely a spike in Ireland's perpetual underdeveloped cycle?

The questions that prompted this study, however, pre-date the Irish recession, entry of the EU and IMF and global financial crisis and came as the economy was booming. It was how do small peripheral states like Ireland deal with the opportunities and limitations posed by world trade in developing spin-offs from indigenous high tech industries? Can these states devise effective policymaking systems to stimulate the growth of spin-off high tech indigenous sectors? How effective was its policymaking process to achieve this?

This contemporary historical study analyses what was taking place within the Irish government and its enterprise development agencies during most of this Celtic Tiger period, 1994-2004. Historically this was an important time in Irish enterprise policymaking history. Policymakers did not have to make acute short term policy decisions as they had had to for the previous seven decades. But instead policymakers had time to plan and had more financial resources than before to implement these policies.

This thesis argues that there was an evolution in the Irish policymaking process towards developing indigenous international sectors during much of the Celtic Tiger years. It argues that during this period it was refining the model it developed for growing the indigenous software sector and expanding it into different sectors. This involved targeting a few high growth, high value added global sectors like biotechnology and interactive media. Then the state agencies selecting many ambitious companies who wanted to compete or were already competing in this sector. The state would then attempt to help make them international winners through various formal and informal supports. It also involved shaping the environment in

which they operated by having appropriate specialist skills development, networking and in some cases special areas where these companies could cluster together.

This study contradicts criticism that during the time of economic boom, the Irish state did little to prepare for the future. This thesis provides a detailed study of how the Irish state was refining its highly selective targeted approach to areas of potential high value added and international demand. The organisational structure and strategy of the state in this area during this period is explored for the first time. So too is the state's formation of alliances both with transnational corporations and the indigenous technical entrepreneur group to pursue its evolving state developmental policy during this period. It was trying to mobilise its resources to "future grab" opportunities in the global informational economy. It was experimenting with strategies to respond to the increasing global, competitive and networked world with rapid technological changes. It was attempting to link this local technical entrepreneurial group into the global economy to create an internationally competitive and sustainable industry. This research uses a singular revelatory historical case study - that of the state's role in the development of the indigenous interactive media industry between 1994 and 2004. This industry was a global, high value added, knowledge intensive and fast growing business, making it an interesting sector on which to base the study.

The success of this policymaking process was mixed the new evidence from this study shows. But it is important to separate the process from the implementation and then the economic, technical and competitive factors that effected policy decisions over the long-term. Some policy decisions were spectacularly unsuccessful and expensive mistakes. For example the Irish state's funding of the Massachusetts

Institute of Technology-backed Media Lab Europe project proved an expensive mistake as it closed with significant debts. Yet geographically adjacent to the Media Lab Europe building, the Digital Hub, a state engineered cluster of indigenous and transnational digital media companies, has been relatively successful. In terms of company development, the failure rate of the interactive media companies tracked for this study was extremely high. Amongst the companies that did survive and become internationally successful, two of three were taken over by foreign firms and subsequently reduced their Irish operations drastically. The implications of these findings are discussed in the conclusion, chapter 7.

Trends in Irish enterprise development

Public policymakers in Ireland used at various stages in the 20th century four distinct strategies for economic growth (O'Malley, 1990; Castells, 1996). As external factors such as technology, regulation, market conditions, transport and communication changed, so too did the applicability of each strategy. Each strategy change was accompanied by a reconfiguration of the institutional structure used for public policymaking. They ranged, since Ireland's separation from Britain in 1922, from a commodity-based agricultural export economy, to industrialisation through protectionism and import substitution and also foreign-led industrialisation. These strategies failed to create sustainable development. The socio-economic crisis of the 1980s meant a new strategy was required. This research looks at this new strategy that was evolving from the 1980s. It was to target high growth, high valued added sectors where Ireland could achieve international competitive advantage by creating clusters of foreign, indigenous or both, sets of companies in the targeted sector.

The Irish state, since 1922, has put in place specialist agencies and incentives to develop targeted indigenous sectors to provide export earnings. This started with agricultural products in the 1920s and grew in the intervening years to include fisheries, bloodstock, tourism and a range of other sectors. Since the 1980s, software has been its most successful targeted sector. This study shows how by the 1990s, the Irish state was refining its policymaking to be even more selective and focussed on knowledge-intensive sectors with a global reach. This was largely based on the successful policymaking model it used to develop the software sector and the growing knowledge of the importance of industry clusters. The Irish state also used the infrastructure that the software sector had created. This study also builds on past theories and research including contemporary studies by Porter (1990), Ó Riain (1999) and Kerr (1999) in this area.

The importance of understanding this policymaking shift was evidenced with the 2004 report from the Enterprise Strategy Group, the Irish government appointed review group on enterprise strategy (Enterprise Strategy Group, 2004; Department of An Taoiseach, 2008; Department of An Taoiseach, 2010). It was clearly signalled in the 2004 report and then re-enforced in the latter ones that this targeting approach would be the underlying philosophy of future indigenous enterprise policymaking. The enterprise strategy group's final report, accepted by the Irish government in 2004, stated: "Ireland is a small country and cannot be first or best in every field of activity: we have to focus. Enterprise in Ireland will succeed by focusing on and reinforcing those niche areas of activity where it has, or can build, sustainable competitive advantage" (Enterprise Strategy Group 2004, p. 39).

The gap in knowledge

The purpose of this thesis is to contribute significant knowledge to the understanding of the Republic of Ireland's public policymaking process; in particular the policymaking process aimed at developing indigenous internationally traded enterprise sectors. Representatives from over 20 governments, including China, Malta and the Lebanon, visited Ireland around 2000 to try and discover the "secret" policymaking formula that helped rapidly transform Ireland from an economic laggard to world leader in the latter half of the 1990s. Most of them left empty handed.

The reality was that Ireland's policymaking system towards indigenous sectors was changing significantly in the 1990s, making it hard to establish any set formula for policymaking. There was change both in institutional structure and its theoretical basis. This study fills a component of the gap in the political economy literature of Ireland identified by several scholars and practitioners (O'Donnell, 1998; Ó Riain 1999 and MacSharry and White). O'Donnell set-out the knowledge gap (O'Donnell, 1998, p. 59):

We need to undertake some detailed studies of how Irish industrial policy works in its relations with enterprises and sectors...First, if we are to truly stop shopping for models from abroad, we must explore the Irish pattern of development in greater depth. Second, there seems to be something of a disjuncture between official statements of policy and the real work of the agencies. Third, the complexity and diversity of business development, and the changing nature of the policy process, means that the agencies are now the key researchers.

It has been argued that the most effective role the original Irish enterprise development agency, IDA Ireland, played was in influencing public policymaking towards creating an attractive business environment (MacSharry and White, 2000, p.

312). As the agency's impact on public policy cannot be quantified, researchers have largely ignored this critical element of Irish enterprise development agencies' work.

This study is purposefully limited in its scope to solely fill the gap in the literature relating to the policymaking process for indigenous sectors. It focuses on the policy formulation stage of policymaking, looking at the state enterprise development agencies and government departments.

The research uses a singular revelatory historical case study - that of the state's role in the development of the indigenous interactive media industry between 1994 and 2004. Interactive media was one of the sectors chosen in line with the state's new policy of targeting companies with good potential in pre-selected high growth global niche sectors. Interactive media combines interactive technology with content such as education and entertainment to produce products and services such interactive TV, e-Learning, film, animation and music. By 2003, near the end of the case study period, the indigenous digital media sector in Ireland had €275 million annual sales, 80% of which was exported (Enterprise Ireland, 2004). The e-Learning component of the digital media sector in particular broke from the traditional style of Irish export. It was knowledge intensive, high value added and based mainly on sales into the sophisticated American market. To establish such a toe hold in the American market was quite an achievement for the Irish sector. The international media business is highly networked in terms of organization, production and distribution and is dominated by American conglomerates like Time Warner and Disney (Arsenault and Castells, 2008).

The study used for the first time Irish policymakers' contemporaneous records, released through the Freedom of Information Act, to show how and why the interactive media sector was chosen by the state. This meant that the depth and detail of the information attained in this study is unmatched in the literature to date. It opened the bureaucratic curtain through a systematic analysis of files from the Taoiseach's office to those of the enterprise development agency and interviews with key actors. Through these, it revealed the real as opposed to stated policymaking system. The restrictions placed on access to this type of record with the amendment in 2002 of Ireland's Freedom of Information Act (Government Publications, 2002) may make such a study difficult in the future.

The original Irish act enabled this study to get the first true insight into the inner workings of Irish government with regard to enterprise policymaking. This study showed how instead of government responding to demands from citizens, it was being proactive in turning broad goals into specific "future grabbing" policies. This "strategic future grabbing" term was used to describe their policymaking approach by a senior Irish civil servant, as is explained further in chapters 5 and 6. This study will show how state economic involvement has moved beyond tax incentives to more fundamental issues such as education, skills, technology and improving factor conditions for selected industries. It illustrates how the small size and non-specialist nature of Ireland's bureaucracy was used for competitive advantage. The agile government apparatus' informal nature was able to quickly respond to opportunities that helped enhance factor conditions for selected enterprise sectors. It also shows the influence of transnational corporations behind the scenes and high reliance on

American expertise and private international consultants to provide solutions to policy problems.

Ironically, when other countries were looking for Ireland's formula, the truth was that the changes in policymaking in the 1990s reflected the failure of its indigenous industry to develop internationally. An exceptional showing by a few world-class foreign and indigenous companies, particularly in software, masked the relatively poor performance of most indigenous companies (Enterprise Strategy Group 2004, p. 60). The increase in exports from the indigenous sector, once adjusted for inflation, was negligible in the 1990s. The majority of exports from indigenous companies - 68% of the €8.7 billion exports of indigenous goods in 2002 - were in the low valued added food and drink sector. Over half of indigenous exports were to the United Kingdom (Enterprise Strategy Group 2004, p. 60). These two factors showed how indigenous companies had largely failed to exploit new markets and business opportunities in the 80 years since Ireland's independence from the United Kingdom.

In the broadest sense, government is an instrument for the achievement of a society's goals and aspirations. As such, one of the true tests of government effectiveness is its capacity to respond to the needs of its citizens by formulating policies that will help achieve these civic aspirations. However, Irish enterprise policymaking in general, and that for sub-sectors in particular, has received limited attention from scholars. Policy studies have tended to focus on macro-economic issues, implementation or political issues at a government level.

The study questions

The main question this study sets out to answer is: What was the policymaking process used by the Irish state between 1994 and 2004 aimed at developing the indigenous interactive media sector? The secondary questions are: 1. Can small peripheral states like Ireland devise an effective policymaking system to sustain the development of internationally competitive indigenous industries? 1. Can the Irish state help create spin-offs of successful indigenous industries like software?

Objects of study

The object of the study for this research was a case study of the Irish government and its enterprise promotion agencies' policymaking process from 1994 to 2004. This is broken down into two elements often interrelated and overlapping. They are: The activity and outputs of identified Irish institutions in the policymaking process relating to the indigenous interactive media sector. The interaction between a sample of indigenous interactive media companies and the state policymaking mechanism for their sector.

The object of the study for this research was not specifically built around the behaviour of individuals or institutions, legislation or programmes. The study used a broader object of study so that its findings would give more meaningful lessons in a wide time frame and across multiple aspects of policymaking.

Results extrapolated from a narrow unit of study, for example a specific programme, would be less likely to be representative of the universe of Irish public policymaking process for sub-sectors of internationally competitive indigenous industry. Due to the individual and even random nature of specific policymaking actions, particularly for

the interactive media sector, a broad examination of policymaking within that sector was required. Each unit of study is examined using the case study methodology outlined by Yin (Yin, 1994). Both enacted and un-enacted programmes and policy were included. Key changes and trends are identified in policymaking for each unit of study. Explanations for changes that happened or did not are advanced.

Thesis structure

The next chapter, chapter 2, reviews the literature in public policymaking and models for internationally traded sector development relevant to Ireland. The development of Ireland's indigenous software sector is also analysed. Interactive media was originally targeted by the state for development, as it was seen as a sub-set of the software sector. Chapter 3 presents the methodology and the epistemology that guided this study's research approach. The main case study part of this research is outlined in chapters 5 and 6. Within this is an embedded case study (chapter 4). This is a study, synthesized in chapter 4, of the interactive media sector's development and interaction with the policymaking system. This is done through a survey and case studies of companies in the sector. The final section, chapter 7, analyses the studies' findings, their implications for policymakers and draws conclusions.

Chapter 2

Literature Review

Introduction/Overview

This literature review is in three distinct but inter-related sections. The aim of the first section is to review the relevant studies and theories on international competitive agglomerations of high tech industry and the role of the state in creating and perpetuating these. This compares and contrasts the empirical research of Porter (Porter, 1990), Magaziner (Magaziner, 1981), Castells (1996, p. 183), Saxenian (Saxenian, 1996) and Ó Riain (Ó Riain, 2004) and others. This will put the second and third section of the literature review, specific to enterprise policy in Ireland, into a theoretical context.

The second section of the literature review narrows to examine the arguments around the correct models, frameworks and theories to measure the public policymaking process. This will identify the central arguments, for example, how is public policymaking defined? What are the boundaries of policymaking? What are the merits and flaws of the various frameworks to measure public policymaking?

The third section of this review goes from the broad literature on developing competitive industries and the public policymaking process to the particular. It critiques the research relating to public policymaking process for enterprise development in Ireland since the mid-1970s. In particular, it focuses on the literature relating to the development of Ireland's indigenous software sector. An understanding of this is critical, as the infrastructure, theoretical basis and policymaking mechanism

for the software sector were important in developing the interactive media sector which emerged internationally from software developments. The review of this research also helps identify approaches to measuring and analysing the public policymaking process relevant to Ireland. It also places the main case study, chapter 5, and findings in historical and theoretical context.

The research questions emerging from the review and the gaps in the literature are then identified in the conclusion. How they will be addressed in this thesis is then outlined in the conclusion. The principal framework used was an amalgamation of the stages approach identified in the literature review. This broke the public policymaking process into three stages - agenda setting, formulation and evaluation of policy, which was analysed separately under each stage in chapter 5. Three other frameworks, identified from the policymaking literature, were also utilised for this study and are analysed briefly. These were Policy Diffusion (Berry and Berry, 1999), Policy domain/reputation (Laumann and Knoke, 1987, pps 152-89) and Porter's "Diamond" (Porter, 1990). The literature review's main points are summarised in its conclusion.

The role of a state in creating internationally competitive industries

This first section of the literature review puts in context and analyses the debates about the role and rationale of the state being involved in the creation of internationally competitive industries. This literature was important in placing this study in context. It was important to understand the theories that were influential on Irish policymakers, particularly Porter's research, as they went about policymaking. This is outlined in chapter 5. So an understanding of it and its critics is important for

understanding the theoretical basis for Irish policymaking. The arguments put forward by Michael Porter (Porter, 1990), Ira Magaziner (Magaziner 1981), Manuel Castells (1996, p. 183) and AnnaLee Saxenian (1996) on what creates competitive advantage in an industry were the main ones compared for this study. These four, too, had examined and written, albeit not in-depth, about the Irish enterprise policy. The argument of Ó Riain (2004) that Ireland, like Israel and Taiwan, had created by the 1990s a Developmental Network State (DNS) through an alliance between the state and techno-entrepreneurial professionals is examined too. His argument is that this is what helped create and promote its high tech sector and was based on his six year study on the Irish software industries in the 1990s. So too is his distinction between the DNS and the Developmental Bureaucratic State (DBS) which he argues was created in Japan and Korea to develop certain internationally traded sectors.

There is general agreement amongst scholars (Porter, Magaziner, Castells, Saxenian, Ó Riain) that geographical agglomeration of skilled technical labour, research and development, venture capital and associational infrastructure helps create international competitive advantage in industries. The close connections, collaboration and competition amongst firms and their sharing of information are key attributes of creating these “innovation hubs”. So too is public sector support. They have extensive empirical evidence from high growth industrial regions such as Silicon Valley in California, Israel, Taiwan, Japan and Korea, to support their findings. There is, however, much debate in the literature about the extent to which this clustering of rival and interconnected firms helps, how in practice it works and the correct role for state’s/regional authorities, in it.

Researchers have developed often overlapping explanations and terms to explain these agglomerations of high growth industries. They are compared and contrasted in this section concentrating on the role of government or regional authorities. One of the most encompassing models is derived from Porter's principle argument (Porter, 1990, p 69) that competitive advantage of an industry was based on what he termed "factor conditions". In Ireland, Porter's findings influenced the Culliton 1992 review of industrial policy, which recommended that policy should aim to develop clusters of related industries, building on sources of national competitive advantage (Industrial Policy Review Group, 1992, pps 73, 74). Porter's key factors were: demand conditions, related and supporting industries, firm strategy, structure and rivalry and the role of government. His arguments were based on empirical research in the 1980s on industries that had become internationally competitive in Germany, America, Italy and Japan.

He created a framework, known as Porter's "diamond model", (Porter, 1990, p 127) which mapped out the interconnection between these firms, demand conditions, supporting and related firms and the role of government. Porter argued that although it was companies that competed, not governments, national authorities can have a significant influence over the elements that make a company or an industry competitive (Porter, 1990, p 127). This ranged from the government being a sophisticated customer for innovative products and services, to regulating industries to ensure that there was strong domestic competition. The latter would encourage companies to be cost competitive as well as innovative. In effect, governments could strengthen or inadvertently weaken Porter's so-called "diamond".

A key element to support these “diamonds”, according to Porter’s research (1990, p. 127) was a geographical clustering or concentration of the same or similar companies and supporting companies and services. This, Porter argued, was critical in building competitive advantage within an industry: “The formation of clusters extends the surges of progress in individual industries” (Porter, 1990, p. 164). Porter (1990, p. 103) stressed the importance of industries creating spin-offs into closely related sectors and the two benefiting from each other’s infrastructure. To develop indigenous industry, Porter (1990) argued it required the development of human resource skills, a scientific base and infrastructure in those fields to support higher-order competitive advantages. Porter added: “The most powerful levers available to government for influencing national competitive advantage are slow acting ones such as creating advanced factors, encouraging domestic rivalry, shaping national priorities and influencing demand sophistication” (pps 678-682).

Studies applying Porter’s diamond model to other industries followed around the world (e.g. Hernesniemi, Lammi and Yla-Anttila, 1996, on Finland; Beije and Nuys, 1995; and Jacobs, Boekholt and Zegveld, 1990, on the Netherlands). While many seemed to support Porter’s theory, some others (e.g. O’Malley and Van Egeraat, 2000) found that while it was useful as a tool, it was not applicable in all cases. In their study of Porter’s “diamond” model’s applicability to successful Irish indigenous industry in the late 1990s, O’Malley and Van Egeraat argued that while useful it may not apply directly to small peripheral states and/or those with a high concentration of Transnational Corporations which are excluded by Porter’s model. Both these applied to Ireland. O’Malley and Van Egeraat concluded: “There is only limited or qualified evidence of Porter-type clusters in Irish indigenous industry”, and that “there is no

clear association between the occurrence of such clusters, or established strong sectors, and the growth performance of indigenous manufacturing”.

But Porter and other scholars (Castells, Ó Riain, Magaziner, Saxenian) are in agreement that geographical proximity of companies in the same sector alone is unlikely to lead to competitive advantage. Informal factors, the ones often difficult for a state to influence, had as much importance in developing competitive advantage within an industry as formal ones. Saxenian (1996, p. 150) argued that open social structures, sharing of technical knowledge, collaboration, infrastructure and ability of companies to adapt to technology change were critical in achieving regional competitive advantage. Castells (1996) developed further the literature on the importance of informal networks in high growth areas. Amongst them was a community of high net worth individuals willing to invest risk capital in start-ups advised by knowledgeable intermediaries. He expanded on the importance of informal networks between technically savvy people. Castells argued, for example, that late night chats at Walker’s Wagon Wheel Bar and Grill in Mountain View, California, did more for the diffusion of technological innovation than most seminars in Stanford University.

Castells also argued that states are moving towards a situation where they are becoming a “Network State”. The state is becoming embedded at many different levels and institutions. His arguments on the success factors and the important role of government largely accord with those of Porter and Magaziner. The benefit of these informal relationships was also argued by Ó Riain (2004) as important in the development of hi tech global regions in Israel, Ireland and Taiwan.

Ó Riain (2004) took forward the concept of a “Network State” developing it further. He argued that much of this success in these three countries was attributable to what he termed the “Developmental Network State” (DNS). The DNS which emerged within these countries, he argued, promoted local learning within global networks through a decentralised but accountable set of state institutions that maintained close ties to local technical communities and international capital. Ó Riain (2004, p. 5) defines the role as the Developmental Network State:

A Developmental Network State (DNS) attempts to nurture localised Post-Fordist networks of production and innovation within global investment flows by shaping the character of the various local connections to global technology and business networks. This is made possible by the multiple embeddedness of state agencies in professional-led networks of innovation and in international capital, as well as by the state’s networked organisational culture.

The mechanism and extent of control that a state should involve itself with enterprise/industrial development for high tech has been a key debate amongst scholars. Magaziner (1981) analysed the Japanese model for industrial development. This involved the state and companies targeting sectors which they forecast would experience high international demand. He explained the model’s basis: “The discipline is that of business strategy. Government policy must be flexible enough and government policymakers knowledgeable enough to respond to individual conditions within industry.” Castells too, had studied this Japanese model. “The Japanese government guides economic development by advising business on product lines, export markets, technology and work organisation. It backs its guidance with powerful financial and fiscal measures, as well as with selective support for strategic R&D programmes” (1996, p. 183). Due perhaps to the Japanese model’s constantly changing nature and informal nature, there is debate amongst scholars as to what is its

precise dynamics. Scepticism about its long-term viability increased with the deep Japanese recession in the 2000s as they saw the system as too inflexible to cope with rapidly changing informational industries (Ó Riain, 2004, p. 7).

Ó Riain (2004, p. 5) further argued that there was an important difference in the extent and modus operandi employed by the Japanese and South Korean states and that of Israel, Ireland and Taiwan towards industrial development. Japan and South Korea shaped their growth in a much more bureaucratic, centralised manner leading Ó Riain to term them as Developmental Bureaucratic States. These were based on alliances between a cohesive state bureaucracy and large firms and business groups (2004, p. 6). It also involved the state targeting sectors which it believed would experience high future international demand as well as stimulating domestic demand for these products or services.

There is much literature on the pros and cons of this targeting approach by government. Porter (1990, p. 673) was one of its sceptics and had long argued about the pitfalls of state targeting high growth sectors for development. He argued that there are two types of targeting - direct and indirect. Direct targeting, involving subsidies, guaranteed government markets and protection, will not bring an economy into an innovation-driven stage. Indirect, which he argued Japan was pursuing by the late 1980s, involved government assistance to an industry that wants to upgrade its scientific, human resource and demand conditions (Porter 1990, p 675). The Korean and Japanese success rate in targeting sectors has been mixed (Porter 1990, p 674). Governments, to target correctly, must understand the subtle conditions for national advantage in specific industries at specific stages of development, Porter argued, which is difficult to achieve. It can also constrain entrepreneurial talent in other

promising industries not targeted, as it can skew government and private sector resources (Porter 1990, p 674). Once started, Porter argued, targeted aid to specific sectors can be hard to curtail particularly if industrial policy is open to political interference. However, Porter is not wholly negative on the targeting strategy: “The policies involved in targeting, implemented properly, can significantly influence the bases of competitive advantage at this stage [investment driven stage] in well-chosen industries” (Porter 1990, p. 675).

The need for high growth tech regions to constantly innovate to retain their competitive advantage is well documented in the literature. But the role of the government in helping achieve this is less well researched. Internationally competitive high tech countries and regions are generally within sectors based on transitory technologies and markets. Saxenian, Porter, Castells and Magaziner were all in accord about the need for “innovation systems” within these high tech agglomerations. Saxenian contrasted the fortunes of Silicon Valley with the decline of Route 126 in America, with the latter unable to innovate fast enough. Saxenian (1996, p. 150) wrote: “Geographic proximity allowed firms to monitor emerging technologies closely and avoid being caught off guard by unanticipated breakthroughs. It provided the face to face communications needed for successful collaboration, while also intensifying competitive rivalries.” But she argued, (1996, p. 150) as did Castells, Porter and Ó Riain, that Silicon Valley also had complex inter-firm and inter-industry networks of producers that were organised to innovate and grow together. It was a complex mix of intensive competition and collaboration. They all agreed that it is hard to replicate successful agglomerations.

Finally, an issue where scholars are divided is the role of foreign investment in these high tech regions in helping them grow their innovation potential. Porter argued against foreign-led industrialisation, which he saw in Singapore and to an extent in Ireland (1990, p. 679). This was on the basis that although foreign-led industrialisation can rapidly create more jobs, bring technical resources, train local citizen and reduce the need for risk capital, it is an element but not an engine for long-term economic growth: “Foreign multinationals are an important part of the process of economic development, particularly at its early stages. They cannot ultimately be the sole engine for creating national advantage in advanced industries. Foreign multinationals should only be one component and an evolving one ...at some stage in the development process, the focus should shift to indigenous companies,” (Porter 1990, p. 679). Porter had looked at Irish policymaking. He argued that Ireland’s policymaking mechanism had not truly committed to the slow process of developing a broader base of indigenous firms (Porter, 1990, p. 679) but in the late 1980s was still pursuing foreign-led development. O’Malley and Van Egeraat (2000) argued that in small, peripheral states like Ireland, the beneficial influence of TNCs to innovation cannot be dismissed, as it is by Porter.

The public policymaking process

The next section of this review of the literature narrows down the examination to look at the arguments about the appropriate frameworks, models and theories for understanding public policymaking. There is no universally accepted model, framework or theory for understanding public policymaking (Bochel and Bochel, 2004; Sabatier, 1997, deLeon, 1997, Schlager, 1999). Instead there are competing frameworks and disputes over what is the proper mode of analysis of the

policymaking process. It is cross-disciplinary involving elements of economics, business policy, management science and political science.

Even definitions of what constitutes public policy vary greatly but some key elements emerge. These are that public policy is a distinctive pattern of actions over time and it is the product of government. One of the most authoritative definitions of public policy is Jenkins (1978, p. 31): “A set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specified situation where these decisions should, in principle, be within the power of these actors to achieve.” This definition separates policy from ambition by linking policy decisions to available resources.

Other definitions, however, widen it out by describing public policy as a programme involving a series of decisions and thus it is designed to affect larger sections within society than a single decision (Hauge et al, 1992, p. 397). An element missing from these two definitions is that nothing implies that governments are acting in the public interest. This gap is partly filled by the argument that the word public refers to public interest. Public policy is thus defined as being of benefit to ~~everyone~~ as opposed to one specific group of people” (Cord, Meiderios and Jones, 1974, p. 63). By combining this latter element with Jenkins’ definition of public policy, we get an acceptable definition. Jenkins (1997, p. 32) defines the policy process as: “The given set of strategies and techniques by which policy is made.”

The next issue is how to classify different types of policy. The following three broad categories for classifying the types of policies are generally accepted in the literature.

Firstly, explicit policies are those directed towards the population of interest. This is termed formal policy. This is an amalgamation of written official decisions made by public bodies with authority that set the goals, procedures and sometimes budgets of public programmes. Examples would be programmes, laws, regulations and protocols. The second classification is policy of omission. This is where in the absence of action *de facto* becomes a policy by default. The third, implicit policies, are those that affect a sector unintentionally.

Where scholars differ greatly, however, is firstly over what should be the time span over which public policymaking should be studied. Secondly, what the boundary specifications should be. Finally, what framework should be used to measure public policymaking?

On the first issue of time span, from the 1940s when the study of public policymaking began to develop internationally, most researchers looked at three to four years. But from the 1980s the argument emerged that it should be analysed over a long time frame (Kirst and Jung, 1982; Mazmanian and Sabatier, 1983). This, these scholars argue, allows for the consideration of the role of learning in the refinement of the policy process. Numerous studies in different jurisdictions and subject areas have shown the benefit of a wide time span (Cerych and Sabatier, 1986; Kirst and Jung, 1982; Mazmanian and Sabatier, 1983). Then studies showed that using a 10 year rather than the standard four year timeframe commonly used up to the 1980s produced less pessimistic results about the success of government policies. Deficiencies in original programmes are corrected through the knowledge and expertise built up over time (Cerych and Sabatier, 1986; Kirst and Jung, 1982;

Mazmanian and Sabatier, 1983). Sabatier argues: “The longer time-frame used in many of these studies meant that several which were regarded as failures were regarded in more favourable light after proponents had had the benefit of a decade of learning and experimentation” (Cerych and Sabatier, 1986). Sabatier (1999, p. 3) recommends six years or more for the time span. The process is not linear and not bounded either by a clear start and finish or by who the participants are. It is instead a dynamic process.

On the second issue, what boundary specifications should be, there is no agreement in the literature. The fact that policymaking is a continual process makes it very difficult to define its boundaries, including start and end points (Gerston, 1997; Sabatier, 1999; Leach and Stewart, 1982). But it is important that before beginning a study of public policymaking that appropriate parameters be established (Boyle, 1999, p. 36). When interest in the study of the public policymaking process began to develop internationally, from the 1940s, the rational method of analysis was generally used. This attempted to classify public policymaking into a series of stages. Dividing it into stages provided a useful structure for considering the issues involved and setting parameters. But the problem was that there was little agreement as to what these stages are or when it started or finished. The seven “stages” frameworks proposed by different scholars was examined for this study (Hill and Bramley 1986; Burch and Wood, 1990; Jones and Matthes, 1983; Laswell, 1971; Brewer and deLeon, 1983; Stewart, 1982). It shows that they range from two stages – development and implementation (Hill and Bramley, 1986) - to seven stages (Laswell, 1971). They are tabulated in table 2.1. These frameworks differ at their extremities. Only three of the seven frameworks include post policy implementation analysis. Some start in

different places ranging from the broader intelligence collection (Lasswell, 1971) to the narrower point of the problem going to government (Jones and Matthes, 1983).

As societies began to get more complex from the 1970s, it was clear that public policymaking was no longer something that can be ordered in neat distinctive, logical and discernible stages. From the 1980s, scholars like Sabatier, Gerston and Bochel and Minogue began to argue that much wider parameters were required. These would expand the parameters to include triggers and agenda setting at start of public policymaking. At its end it was expanded to include evaluation. Taking it at the broadest parameters then, four stages of public policymaking emerge. These are agenda setting/triggers, policy formulation and legitimisation, policy implementation and evaluation. The literature on each of these stages is now reviewed.

(1)Agenda setting/triggers

It is argued by contemporary public policymaking process scholars (Sabatier 1999; Gerston, 1997; Bochel and Bochel, 2004; Minogue, 1993) that this should be the first stage of analysis. Starting at this point is rejecting the rational policymaking school which argues that it should start at the later formulation stage. Governments have a multitude of public problems competing for a place on their agenda. The issues for solution are put on to the agenda for public policy solutions by a triggering mechanism, the public policymaking process scholars argue (Sabatier 1999; Gerston, 1997; Bochel and Bochel, 2004; Minogue, 1993). This is a critical event, or set of events, that converts a routine problem into a widely shared, public response (Gerston 1997, p. 23). Gerston identified the importance of understanding agenda setting or actions that leads to the programme or policy.

It is not enough to explain public policy by looking at the decisions that emerge from government. Without an understanding of agenda development as well as the combination of issues available for resolution, policy analysis is a one –dimensional experience. Policy makers may be valuable catalysts for converting issues to commitments, but the public agenda constitutes the list from which they take their cues for action.

The agenda can be split into two classes. The first, systemic, is issues seen by the political community as worthy of government attention. Secondly, institutional, which policymakers view as appropriate for their active consideration. A problem must have the support of key decision makers to attain agenda status (Jones and Matthes, 1983, p. 122).

The government, or elements of its apparatus, can have a number of agenda setting strategies. If government plays a limited “hands-off” role then it tends to benefit those who can organise quickly and effectively (Jones and Matthes, 1983, p. 126). Those in need of government attention but without resources to compete for agenda status will be ignored (Jones and Matthes, 1983, p. 126). A second strategy is for the government to encourage a broad involvement in problem definition. The government aids those known to lack resources but it does not identify problems for others. The third is where the government takes the initiative and defines the problem. This latter system, Jones notes places an enormous burden on government to survey events, judge the consequences and set priorities in a complex society (1984, p. 38).

Proposals for action can come externally or internally from bureaucrats as an extension of their administrative duties. They may also come from private consultants who are involved in researching issues (Jones 1984, p. 38). Of the multitude of sources that scholars have identified as triggering mechanism, the most relevant ones

are political leadership, diffusion, media concern, technical change, previous policy applications and policy entrepreneurs (Cobb and Elder, 1972, p. 84; Gerston, 1997 and Sabatier, 1999). These are also defined as policy windows - opportunities for policy innovation.

Of these triggering sources, two which are often inter-related stand out in importance – the policy entrepreneur and diffusion. A policy entrepreneur is an individual who advocates policy ideas and is willing to devote his/her energies in pursuing it (Berry and Berry, 1999, p. 183; Mintrom, 1997, Sabatier and Jenkins-Smith, 1998). These actors can be internal (part of the government) or external. The literature, however, is not well developed on policy entrepreneurs.

(2) Policy formulation and legitimisation

The literature on the formation stage of policy draws from several disciplines including administrative science, management science and organisational behaviour. Most scholars agree, however, that the starting point in analysing it is to identify the formal government structure that may be pursuing a resolution to the policy problem in question (Sabatier 1999, p. 8 and Gerston, 1997, p. 23).

To do this, three methodologies were examined to find an appropriate one to identify the elements of the Irish government involved in the policy formation for interactive media. The position approach and decision/participatory approach were rejected as they risked omitting important actors (Bachrach and Baratz, 1970; Melbeck, 1998, p. 536). The third methodology, Knoke's reputation research framework, is based on the judgement of experts who are asked to name the most important actors within a policy

arena (Knoke, 1998). It was chosen for this study as it contained the minimum amount of drawbacks of the three techniques and had been empirically tested (Laumann and Knoke, 1987, pps 152-189; Pappi, 1984, pps 90, 91).

Once the actors have been identified, other studies looked at how they interact within the bureaucracy. These studies have shown how policy can be developed horizontally with several state agencies co-ordinating together or acting separately. Alternatively it can be vertical. The decision is made at one level and passed to another, usually a lower level, for implementation.

Some scholars have argued that policy formation is a two-phase process (Jones and Matthes, 1983, p. 118). The first is the problem coming to government, being perceived as a problem for public action and then defining it. The government then sets priorities. Scholars have described many of the methods or “styles” policymakers use to formulate solutions to match these priorities. Amongst these is comprehensive policymaking where policy makers try to treat all aspects of a particular problem and estimate the effects of proposals on other issues (Jones and Matthes, 1983, p.132).

Scholars have further classified policy formulation (Burnstein et al, 1995; Jones and Matthes 1983; Minogue 1993). Systematic and unsystematic methods are self-explanatory. There is the proactive and reactive. This is effectively a “make it happen” style versus a “let it happen” approach. Routine formulation relies on precedent for responding to a particular set of circumstances. Analogous formulation examines what was done to treat a problem judged to be similar to the present

problem in the same or another jurisdiction. Creative formulation is an effort made to develop imaginative proposals suited to the characteristics of the problem.

Some of these scholars use the managerial approach to decision making on policy. Amongst the principle tools used here are the cost-benefit analysis, systems analysis and programme budgeting. They are models drawn from economists interested in efficiently meeting objectives at the least cost (Minogue 1993, p. 17). Others use systems analysis which relies more on judgement than quantitative methods (Minogue 1993, p. 15).

An increasingly common approach to policy making is the use of private consultants. They have developed sophisticated methods for policy formulation, combining the above techniques. With issues becoming more complex there is a greater demand for professional experts, often these private consultancies, to work with or in the bureaucracy. The increasing use of consultants by bureaucracies tends to obscure responsibility. Legislators avoid responsibility by permitting administrative discretion while the administration contracts the responsibility to a consultancy (Jones and Matthes, 1983, p. 135). The increasing importance of this “privatization” of policy formation is underdeveloped in the literature. The importance of experienced personnel in the system and how the loss of them can bring about change in policymaking is also neglected in the literature (Sabatier 1999, p. 123).

Another important factor is the tempo of policymaking. Acute policymaking shows quick progression from the appearance of an idea to its implementation. Incubated

policymaking occurs over a period of years where support for an idea builds slowly (Burnstein et al, 1995).

The final step in the formation process is approval for programmes. It requires getting support from those with both authority and interest (Jones and Matthes, 1983). There is usually a hierarchical authority, both political and bureaucratic. Approval may require the support of both. In principle those at the peak of the hierarchy have formal or de jure decision-making authority. De facto all they do is approve the proposals offered to them by professional expert advisers (Minogue, 1993, p. 17).

All government bureaucracies are political, internally as well as externally. Thus they may not act rationally. Minogue sums it up: “All organisations have politics, in the sense that they contain groups of people and individuals, who will compete with each other to control and manipulate resources, policies, practices, each other and the organisation itself” (p. 17). The literature is, however, surprisingly weak on analysing the effect that politics has on formation of public policy. It may be due to the lack of access in western Europe to internal governmental records. This is an area to be developed in this study.

(3)Implementation

The implementation of policy is the translation into practice of the policy that emerges from the policymaking process (Minogue 1993, p. 19). It is a separate branch of the policy process with its own literature and falls outside the focus of this study. It would be wrong to assume, however, that what is decided is implemented and does not have unintended consequences which can affect policymaking.

(4)Evaluation

The early policy process literature put little emphasis on evaluation as being an integral part of policymaking. The rational school did not include it. Evaluation is defined as the assessment of the effectiveness of a public policy in terms of its perceived intentions and results (Gerston 1997, p. 120). In the 1950s and 1960s, when the practice of evaluation was developed as a component of policymaking, practitioners looked for quantitative scientific measures of results. Contemporary policy evaluation, however, is more evenly balanced between quantitative and qualitative measures (Gerston 1997, p. 121). The growing emphasis within policy process literature of longer-time span studies and increased understanding of the role of “policy orientated learning” has increased evaluation’s importance.

Contemporary policymaking scholars, like Sabatier (1999), view evaluation as a critical part of policy orientated learning. This Sabatier defines as “relatively enduring alterations of thought or behavioural intentions that result from experience or new information and that are concerned with the attainment of revision of policy objectives” (Sabatier, p. 123). Several scholars warn, however, that caution has to be exercised about the objectivity and timeliness of feedback. People, usually politicians or senior bureaucrats, usually commission it with a political stake in their outcome (Palumbo and Maynard Moody, 1991, pps 284-185; Minogue, 1993, p. 22). Another difficulty is that policy tends to lag behind the issues it sets out to address (Palumbo and Maynard Moody, 1991, pps 284-185; Minogue, 1993, p. 22).

The final issue was what is the appropriate framework to measure public policymaking? Theoretical frameworks are useful when conducting a case study. They help bound the inquiry and specify classes of variables and general relationships between them (Yin, 1994, p. 13; Schlager, 1999, p. 234).

The traditional stages approach can be very simplistic and mis-represent the policy process in reality (Sabatier, 1991, Sabatier and Jenkins-Smith, 1993; Stewart, 1982, pps 26-27; Lindblom and Dahl, 1953). On the other hand, the incremental approach to analysing the policymaking process was not adequate for coping with the rapid change and technical complexity of societies from the late 1960s (Burch and Wood, 1990; Gregory, 1989, p. 139; Lindblom, 1979). Thus the rational stages frameworks (table 2.1) began to fall out of favour with scholars. New frameworks were required to measure it. So from the late 1980s new frameworks began to emerge that tried to capture this increasing complexity. Thirteen of these theoretical were examined.

Table 2.1: Competing frameworks for the stages of public policymaking

Stages Laswell (1971)	Stages (derivatives) Brewer and deLeon (1983).	Stewart's policy derivation guidelines (1982)
<ul style="list-style-type: none"> • Intelligence • Promotion • Prescription • Invocation • Application • Termination • Appraisal 	<ul style="list-style-type: none"> • Agenda setting • Policy formulation and legitimisation • Implementation • Evaluation 	<ul style="list-style-type: none"> • Policy derivation • Policy adoption • Policy justification

Hill and Bramley (1986)	Burch and Wood (1990)	Managerialism (various)	Jones and Matthes (1983)
<ul style="list-style-type: none"> • Development up to the point where legislation is enacted • Implementation from there on 	<ul style="list-style-type: none"> • Initiation • Formulation • Implementation 	<ul style="list-style-type: none"> • Formation • Implementation • Evaluation 	<ul style="list-style-type: none"> • Problem to Government • Action in government

They were examined for their acceptance by contemporary policy scholars and their record of empirical testing. These expanded to include triggers and agenda setting at start of public policymaking and evaluation at the end (Sabatier, 1999; Gerston, 1997; Bochel, 2004; Minogue, 1993). The results of this analysis are tabulated in tables 2.2 and 2.3. Each framework had its anomalies but some had comparative advantage in different circumstances. For example, Arenas of Power, was from empirical studies more suited to regulatory and distributive policymaking. But it has had little empirical testing. Another, Constructivist, focuses on the social construction of policy problems, belief systems and/or frames of reference.

The difficulty with it is that it is hard to falsify it. Cultural Theory examines policy from four ideologies – individualism, hierarchicalism, egalitarianism and fatalism. As it is ideology based, its application can be too limited. Funnel of Causality and other frameworks in Large-N Comparative Studies try to explain variation in policy across jurisdictions due to differing socio-economic conditions, public opinion and state institutions. It is good for cross-jurisdiction studies but less so for those concentrated in one region or country. The Punctuated-Equilibrium framework argues that there are periods of incremental policy change punctuated by significant change. This, however, seems more suited to measuring legislative change than programmes. The Managerialism framework provides a philosophy and method for policymaking based largely on management science. It has been sharply criticised by Minogue as this framework omits politics from the policymaking process (Minogue, 1993, pps 25-26).

The three more widely applicable to various scenarios are outlined in table 2.3. Of these, the Advocacy Coalition Framework was one of the most sophisticated. It views the policy process as a competition between coalitions of actors who propose beliefs about solutions to policy dilemmas (Sabatier and Jenkins-Smith 1993, 1999; Sabatier 1998). The framework took account of the fact that policymaking was becoming more complex and technical. It also expanded on those actors within the policymaking network. The framework's originators argue that researchers, policy analysts and sometimes journalists can have an important role in the policymaking process, particularly in terms of evaluation of policy. It also analyses the conditions under which policy orientated learning across coalitions can occur.

The Advocacy Coalition framework was developed in the early 1980s and refined in 1998 to replace perceived inadequacy of the existing rational and incremental frameworks. It argues that advocacy coalitions could be centred on belief systems rather than positions in the policymaking hierarchy (Sabatier, 1999, pps 117-151). Their core beliefs remained stable over a long period of time - over ten years. Actors within the framework might change their secondary beliefs over time, but rarely their core beliefs. The accuracy about the assumptions on coalition formation, behaviour and persistence has been questioned (Schlager, 1995; Kubler, 2001) and some of the framework's nine hypotheses challenged (Schlager, 1997).

But the framework's authors argue that it was never supposed to be a hundred per cent representative of every policy network. It will, however, represent a high proportion of what takes place and is an evolving framework. Much of this contemporary public policymaking literature on agenda setting/triggering stage deals with the composition of policy networks. It deals with individuals or institutions that place, or try to place, items on the government agenda. Many tried to classify these actors in terms of their influence with varying degrees of success. A method developed to measure this influence is Knoke's reputation research framework.

It is based on the judgement of experts who are asked to name the most important actors within a policy arena (Knoke, 1998). It contained the minimum amount of drawbacks of the three techniques and had been empirically tested (Laumann and Knoke, 1987, pps 152-189; Pappi, 1984, pps 90, 91).

Table 2.2: Holistic policymaking frameworks*

Framework name	Description	Critique
Arenas of Power	Examines different types of policy like regulatory and distributive. Argues each is a different process.	Little empirical testing of this framework.
Constructivist	Focuses on the social construction of policy problems, belief systems and/or frames of reference.	Hard to falsify this framework.
Cultural Theory	Examines policy from four ideologies – individualism, hierarchicalism, egalitarianism and fatalism.	Ideologies based.
Funnel of Causality and Other Frameworks in Large-N Comparative Studies	Tries to explain variation in policy across jurisdictions due to differing socio-economic conditions, public opinion and state institutions.	Good for cross-jurisdiction studies.
Institutional Rational Choice	Studies how the behaviour of rational individuals is affected by institutional rules.	Typically examines choice against competing options. Excludes framing and selecting the options.
Punctuated-Equilibrium	Periods of incremental policy change punctuated by significant change.	More suited to measuring legislative change than programmes.
Managerialism	Provides a philosophy and method for policymaking based largely on management science.	Minogue's criticism (Minogue 1993, pp. 25-26): it omits politics.
Multiple-Streams	Different streams of activity converge to present opportunities for policy change.	More suited to measuring legislative change than programmes.
Stages	Identifies stages of the policymaking process.	The framework helps categorise the stages in policymaking that provide a useful structure but is not longitudinal.

(*Adapted from Sabatier 1999, pps 6-12)

Table 2.3: Complex holistic theoretical frameworks for analysing policymaking*

Framework name	Description	Main advocates	Critique
Advocacy Coalition	Beliefs are more important than hierarchical position. Networks of actors compete to control policy	Sabatier and Jenkins-Smith 1988: Advocacy Coalition Framework	Focuses on the role of policy actors, learning by doing and policy networks over a 10-year period
Policy Diffusion	Studies the transition of policies between jurisdictions	Berry and Berry, 1999: General Model of Government Innovation - Walker, 1969: Leader Laggard Model	Studies the role of diffusion of ideas that feed into policymaking and reasons for diffusions including competition and public pressure. Important for industrial policy Empirically tested
Policy Domain and Reputation model	Examines policymaking through analysing the network of a policy domain	Laumann and Knoke, (1987, pps 152-189)	Provides an empirically tested method for ascertaining what institutions/actors to study within the policymaking domain. Empirically tested

(Adapted from Sabatier 1999, pps 6-12)

Another way that policy actions can get onto the agenda is by diffusion. The Policy Diffusion framework argues that information relating to other country's existing or planned policy often created policy entrepreneurs, internal and external. It argues that states may adopt the policies of others to remain competitive, because they have learnt the benefit or as a result of public pressure (Berry and Berry 1999, p. 171). Diffusion is defined as "the process by which an innovation is communicated through certain channels over time amongst the members of a social system" (Berry and Berry 1999,

p. 171). Diffusion is distinct from policy invention – the process through which original policy ideas are conceived.

Three relevant diffusion frameworks were examined for this literature review. The National Interaction framework assumes a network amongst state officials where they learn about programmes from peers in other states (Berry and Berry, 1999). The Regional Diffusion one assumes that states are influenced primarily by neighbouring jurisdictions. This is due to information flows between the jurisdiction and fear of mobility of people or businesses. The Leader-Laggard framework assumes that certain states are pioneers in the adoption of a policy. Most often, scholars presume that leadership is regional, with states taking cues from one or more pioneer states within their geographic area (Berry and Berry 1999, p. 176).

Theories of individual and organisational innovation have stressed the importance of financial resources in innovation. Berry and Berry hypothesize that the fiscal health of a state's government often has a positive impact on its propensity to adopt new policies (1999, p. 182). But a problem with testing these diffusion models is that they rely on information about the timing of state adoption and omit co-incidental incorporation.

To order the research, it was decided in accordance with the literature, to break the analysis of policymaking into stages. The stages chosen as the categories for this study represent a synthesis of the stages outlined in the more contemporary literature. These stages are: Agenda setting/triggers; Policy formulation and legitimisation; Implementation and Evaluation (as it relates to policy formation).

The approach taken to the penultimate methodological issue, which is what framework/s should be used to measure the policymaking process, was to use several. This was because the examination of the literature found that no single framework would provide an appropriate all encompassing one.

One of the first stages of this research was to establish who the key actors or organisations in the public policy domain are in relation to public policymaking for the indigenous interactive media sector. Knoke's reputation framework (Knoke 1998, pps 507-530) was used for this.

The international nature of hi-tech industry, meant that policy diffusion is also important. Thus, three relevant diffusion frameworks will be used. These are National Interaction, the Regional Diffusion and the Leader-Laggard frameworks. While there is a difficulty in using these frameworks – they rely on information about the time of state adoption and omit co-incidental adoption – care will be taken in the study to overcome this drawback.

These frameworks take account the fact that policymaking was becoming more complex and technical. It also expanded on those actors within the policymaking network. The originators of these frameworks argue that researchers, policy analysts and sometimes journalists can have an important role in the policymaking process, particularly in terms of evaluation of policy. It also analyses the conditions under which policy orientated learning across coalitions can occur. The review of the

literature on Ireland's indigenous software sector indicated that these three elements were important factors in the policymaking process.

Review of changes in the Irish industrial policymaking process

This third section of the literature review narrows down from the examination of the broad theoretical policymaking process in sections I and II. It is an analysis of the literature relating to the public policymaking process for enterprise development in Ireland. In particular, it focuses on the literature relating to the development of Ireland's indigenous software sector from the 1970s to 1994. As mentioned previously, interactive media was treated by Irish policymakers as part of the software industry up until 1996.

Public policymakers in Ireland used at various stages in the 20th century four distinct strategies for economic growth (O'Malley, 1990; Castells, 1996). As external factors such as technology, regulation, market conditions, transport and communication changed, so too did the applicability of each strategy. Each strategy change was accompanied by a reconfiguration of the institutional structure used for public policymaking.

The Department of Agriculture, which the Irish state inherited at independence from Britain in 1922, led economic policy when the policy was based on agricultural export-led growth. The finance and commerce departments then effectively took over industrial policymaking up to the 1950s when the policy was import substitution and protectionism. A state institution founded in the 1950s, the Industrial Development Authority (IDA), became the de facto industrial policymaking body until the early

1980s when foreign-led export growth and radical free trade was the strategy. These three historical policymaking structures are well critiqued in the literature (Daly, 1991; O'Hearn, 1998; O'Malley, 1990; Forfás, 2000).

The state run IDA monitored international business trends and worked closely with large foreign companies. Through this it formulated policies and incentives to make Ireland an attractive location for mobile investment (O'Hearn, 1998; MacSharry and White, 2000; Ó Riain, 2004). While legally IDA had a function to develop indigenous industry, in practice, it concentrated on attracting mobile international investment. It effectively acted as a conduit between Trans National Corporations (TNC) and the Irish government.

The IDA had a perceptive international business intelligence gathering expertise. It tried to identify high growth industry sectors and companies from within, with which it could attract companies to Ireland. In 1969 a new market opened for independent software when IBM, the American computer giant, unbundled the price it charged for hardware and software. The IDA, four years later, included software as a sector for special tax and grant incentives in its Service Industry Programme. By 1977, these measures had attracted five TNC software companies to establish in Ireland. While legally the Irish software companies could benefit from the same aid as TNC's, there was an implicit policy against them doing so (Pitcher, 1984). This implicit IDA policy prompted the fragile indigenous techno entrepreneur class in Ireland, no more than 300 people, to organise in response to perceived state aid to their competitors (Pitcher, 1984). The indigenous software companies formed the Information and Computing Services Association (ICSA) in 1977. They were also concerned with the awarding

some state software contracts to companies outside of Ireland. Furthermore, they wanted to lobby about the lack of opportunity for indigenous software companies to develop their expertise (Irish Computer, 1977, p. 1). Over the next three decades, the relationship developed into a triangular policymaking network. It was between this indigenous techno-entrepreneurial-academic group, state agencies and the global technical market (Ó Riain, 2004). The success of this network, with Ireland becoming the one of the world's largest software exporters by 2000, evolved into the policymaking template used for other indigenous high growth sectors in the 1990s and 2000s.

The underlying reasons for the Republic's indigenous software sector becoming internationally competitive have been comprehensively documented in the literature (Ó Riain, 1999 and O'Malley et al, 1997; Pitcher, 1984; Buckley, 1993; National Software Directorate, 1992, 1994, 1996, Clarke, 1995; National Economic and Social Council, 1997; Northern Ireland Software Federation, 1999; Kerr, 1998). This section of the literature review will use these studies complemented by primary official records to analyse the change in public policymaking that happened between 1977 and 1994 relating to the Irish software sector. The wider political, social and economic environment, both domestically and internationally, in which policy towards the sector evolved and was implemented, is also tracked.

While there are similarities between the interactive media and software sectors, significant differences between the structure, end product and market of both exist. The indigenous software sector is essentially concerned about the production of programs run on computer hardware that act as tools for the user. It also includes

training in these tools and servicing the software. The indigenous interactive media sector produces and blends content on a software platform to make it interactive.

However, much of the educational, infrastructure, policy evolution, private sector and industry supports for the indigenous Irish interactive media sector were formulated and refined during the 1980s and 1990s. These were aimed at growing the indigenous software companies. An official definition of the indigenous software industry is those companies that are Irish owned involved in products or services, which have over 60% of embedded software (Clarke, 1995; National Software Directorate, 1992). Industry is defined as a group of companies whose products are sufficiently close substitutes for each other (Thompson and Strickland, 1983 pps 247-248).

The Irish government was hands-off between 1978 and 1988 when it came to being directly involved in industrial policymaking let alone the emerging software sector. It did not act on two reports it commissioned in the 1970s recommending a government appointed computer council and other measures to increase computer use. While legally industrial policymaking was the role of the Department of Industry, Commerce and Trade, de facto, it was just an approver. Policy formation, implementation and evaluation were largely in the hands of the state industrial development agencies, mainly the IDA (NESC, 1982). Other smaller state industrial development agencies - Eolas, An Bord Tráchtála, Shannon Development and Údarás na Gaeltachta - played a smaller role in policymaking. They also effectively set their own measures (NESC, 1982; National Planning Board, 1984).

The introduction of the mini-computer in the early 1970s saw computing start to become pervasive throughout all sectors of society. It was more powerful and cheaper than its precursor, the bulky and expensive mainframe. The advancing technology and business change saw in 1978 the IDA amend its policy. It switched from regional job targets to sector based ones with electronics, including software, included amongst them. For the first time the Irish state had moved away from manufacturing as the plank of industrial policy. It began to be more selective in its industrial policy, target industries about to enter their high growth phase and attempt to tailor policies to suit these different sectors.

The government's non-involvement in the sector left open a policy window for the emerging techno-entrepreneurial-academic coalition. The trigger was a 1978 report that found Ireland was 12 years behind its nearest neighbour and archrival, the UK, in computer usage in second level schools. In response, the Computer Industry Joint Education Committee (CIJEC), comprising six non-governmental industry organisations, was formed.

The CIJEC drew up a curriculum for third level courses in computer programming. In the late 1970s the Manpower Consultative Committee, a government appointed skills advisory group, produced a number of studies forecasting high requirement for electronic engineers. It recommended an upgrading of skills in these areas to ensure that the state could continue to attract in computer TNCs into the next decade. The IDA, in its proactive policy role, had pressed for urgent measures to greatly increase electronic engineering graduates to fill vacancies in TNC's. The third-level institutions broadly adopted the new computer courses.

But the Manpower Consultative Committee forecasts proved far too optimistic for the number of TNCs coming into Ireland in 1980s. It overestimated the skill levels they would require. Ironically, this oversupply of highly skilled computer graduates made Ireland become one of the cheapest places in the world for high quality software development. This in turn attracted many software TNCs and helped indigenous software companies grow too. Later studies (see Clarke, 1995; NESC, 1997) show a high proportion of founders of indigenous software companies had some experience in TNCs, either at home or abroad. This indicated the importance of these companies in building up management and technical capability.

By 1980, another policy window opened for the increasingly confident techno-entrepreneurial alliance as the Irish state faced a worsening economic situation. The IDA's policymaking and implementation role began to lose its legitimacy as the foreign-led growth model failed to deliver adequate jobs to compensate for those being lost in indigenous business.

Irish governments throughout the 1980s commissioned several expert reports on industrial policy and effectively re-gained control of policymaking for economic growth. The governments had been triggered by the flight of labour and capital from Ireland to become proactive policymakers for industrial development. Much of the policymaking formulation began to be sub-contracted to private national and international consultants. Lobby groups on behalf of the indigenous software sector also fed into these reports. The most influential report was that of Telesis, an American consultancy headed by economic consultant Ira Magaziner.

The policymaking structure that Telesis recommended was modelled largely on the Japanese “planned market orientated” system. Japan had developed a model of strategic state development of internationally competitive industries (Castells, 1996; Amsden, 1989; O’Hearn, 1998; Magaziner, 1981; Porter, 1990). Other East Asian countries like Taiwan, South Korea and Malaysia adopted elements of this model too. At the Japanese system’s core is the Ministry of International Trade and Industry (MITI) that guides strategic industrial development (Castells, 1996, p. 183; Magaziner 1981, p. 32). The Japanese state intervention system is based on consensus, strategic planning and advice. Magaziner was the principal author of the Telesis report (Magaziner 1981, p. II). However, the model that eventually emerged in the mid-1990s – the state dealing with a large portfolio of companies and promoting a particular set of company development activities – was more akin to Taiwan or Israel (Ó Riain, 2004, p. 109).

Both the Telesis and National Planning Board’s reports effectively became formal government policy in 1984 (White Paper on Industrial Policy, 1984). By this stage, unemployment in the Republic had reached 16% of the work force, one of the highest levels in developed countries that are members of the Organisation for Economic Co-operation and Development (OECD), the think tank for western countries. There was growing cross-party political consensus aligning with the emerging techno-entrepreneur group’s policy proposals. In the Irish parliament, Bertie Ahern, then an opposition spokesperson for the largest party, the centrist Republican party Fianna Fáil, outlined its industrial policy (Official Report Dáil debate 1985, p. 295).

Fianna Fáil believes that we must select for growth the sectors which are going to provide value added to the economy and will bring technological spin-offs. We have to develop a competitive level in technology, technical skills, quality, high productivity,

export more and have more back-up services. We must concentrate our efforts on biotechnology, micro-electronics, food processing, mariculture and engineering.

A more “hands on” approach by the highest level of government to industrial policymaking was being taken. There was a consensus between the main political parties based on pragmatism rather than ideology. *The Way Forward 1983-1987*, a national development plan drawn-up by senior civil servants, was adopted as the Fianna Fáil manifesto in the 1982 general election. The rival Fine Gael and Labour coalition implemented it.

The lack, however, of policy proposals from politicians is probably due to a lack of expertise. The Irish electoral system can make it difficult for those working in management in the private sector to enter it. The centralised, bureaucratic civil service, where much of the new policy was being formed, while attracting a high calibre of personnel, had few people with first-hand business or technological experience. Significantly the plans, which gave better focus to industrial policy during the 1980s, were co-ordinated by Padraig Ó hUiginn. He was a senior civil servant who had previously headed a state agency involved with business promotion.

The political and bureaucratic consensus on policy change strengthened the power of the growing techno-entrepreneur group. By the mid-1980s there was consensus amongst the political parties that the indigenous software industry had to be developed. Up until the late 1980s, small businesses had little political lobbying power. Although small companies made the greatest contribution to job creation, there was little state support or programmes to help in their development. This was until unemployment became so high in the mid-1980s that governments in western

Europe, including Ireland, came to take them seriously as employment creators. This consensus led the IDA in 1985 to invite views from the software sector on a proposed development plan for the sector. This drew the techno-entrepreneur group into its policymaking network.

One of the highest levels of the Irish state's bureaucracy, the Department of Finance, enacted explicit creative policies to assist the sector. These policies were formulated by the industry and state agencies and adopted by the Department of Finance after modifications and cost benefit analysis. They were implemented by the tax collection agency, the Revenue Commissioners. They included new schemes to promote venture capital investment in high tech international service companies. These included tax incentives for marketing and R&D, the re-institution of state venture capital company Nadcorp and a tax relief based Business Expansion Scheme. This was innovative, experimental policymaking from a hitherto conservative finance department. The techno-entrepreneur group in unison with the IDA had convinced the department to fill the funding gap left by the perceived shortage of private risk capital in Ireland. The importance of risk capital to develop the software sector is analysed in the literature (Castells, 1989; Ó Riain, 2004; Tonge, 1988).

Policy to support the software sector was also mediated from the Department of Finance via the two venture capital companies it controlled. They both were early investors in the software sector. One of them, Industrial Credit Corporation (ICC), set-up a dedicated software venture capital fund and established a reputation for its expertise in indigenous hi-tech investment (Tonge, 1988). Empirical evidence suggests a reluctance of the non-state funds to invest in software. This was until the

mid-1990s when it was shown that the state backed venture capital funds had greatly improved the return they were getting from the software sector (Tonge, 1988).

Probably a more important long-term aspect of this growing relationship between these state actors and the techno-entrepreneurial class was the informal sharing of knowledge. Most of the studies (Buckley, 1993; Gregg, 1991; McCafferty 1996) of the Irish software sector in this period, apart from the notable contributions from Ó Riain (1999, 2004) and Kerr (1998), miss this critical interchange. Although there has been no empirical study, the expertise in software company development accumulated within these state institutions is likely to have had a beneficial effect on policy formation. Much policy was based on the translation of experience – effectively the pragmatic school of policymaking (Ó Riain, 2004, p. 163). It created experts within the state's policymaking apparatus.

This was critical because for Irish governments, diverting funds and resources away from TNCs was a political gamble. TNCs were high profile. They had shown ability to provide relatively well paid jobs in large quantities quickly even if they could not sustain them. Indigenous industry, on the other hand, took many years to develop. The small numbers involved in each company meant that new companies opening did not grab headlines. The indigenous failure rate was alarming. None of the indigenous manufacturing companies assisted by the state in 1979 were still in existence two decades later (Enterprise and Employment, 1999). In addition, as these industries were just emerging, there was little understanding at a political level of the software industry. It was wrongly perceived as high risk.

There was internal resistance within the state's enterprise agencies to change the policymaking status quo. In practice, policymaking continued as in the 1970s within the state agencies largely due to a lack of reform in structures (Report of the Industrial Policy Review Group 1991, p. 62). The agencies, particularly IDA Ireland, were reluctant to cede back the policymaking role to the Department of Industry, Commerce and Trade. The IDA was helped in its quest to retain control by increasing competition for foreign direct investment in the 1980s. This saw little shift in the state resources being transferred from attracting TNCs to helping develop indigenous companies. The shift in the annual budget was to be 75% indigenous against 25% for foreign companies by 1990. However, it had only moved from 51% in 1985 to 54% in 1989 (Report of the Industrial Policy Review Group, 1991, p. 62).

There was some policy innovation and the political consensus on the issue of support for indigenous industry, specifically the software sector. But assistance on the ground for the indigenous software companies was limited. The IDA had established a National Software Centre to assist technically the industry but this was done without consultation with the indigenous software sector (Tonge, 1981). The Department of Industry, Commerce and Trade closed it after a short period, due to the tensions with the indigenous industry (Ó Riain, 2004, pps 187-190).

The overall lack of action prompted the techno-entrepreneur group to commission from private consultants its own sector development report. The Irish Computer Services Association study on the sector was adopted in 1991 by the Department of Industry, Commerce and Trade. The availability of European Union (EU) funds to finance the study made it more politically acceptable. This marked a significant shift

in the policymaking apparatus for the indigenous sector. The indigenous software sector, previously under the remit of the largely TNC orientated IDA International Services Division, was moved. It came under its own Software Support measure of the Small Business sub-programme of European Union structural funds.

A National Software Directorate to co-ordinate the sector was established in 1991. It had an explicit “bottom-up” policymaking function for the software sector. Its founding chief executive was Barry Murphy, former managing director of one of the most successful indigenous software companies, Insight Software. This gave it credibility and focus (Kerr, 1998; Ó Riain, 2004). It worked closely with industry, conducted surveys and undertook significant international intelligence gathering on the sector. This systematic analysis by its in-house experts meant that triggers for policy action came internally in the state’s policymaking apparatus. It also linked the state’s policymaking apparatus to the global technical market. Its goal was comprehensive policymaking for the software sector.

The formulation of its policy responses to the problems identified was also done internally or sub-contracted to private sector experts. The literature is weak on this aspect probably because academic researchers did not have access to its internal records. The new policymaking method significantly increased the tempo of policymaking and reduced the bureaucracy. Its policymaking was proactive and based on a systematic analysis of policy options. The basis for its policymaking was business strategy as it related to improving the international competitiveness of the software sector.

Its ability to identify particular needs of the software sector and see through programmes to remedy them was the greatest benefit of the National Software Directorate (Clarke, 1995, p. 46). Much of its work and policies was ad hoc without an overall strategic plan for the sector. Its initiatives included a €13.6m software venture capital fund, information transfer, industry specific courses and an Industry-Education Forum, to expand courses in the sector (Clarke, 1995, p. 46). It also established three research centres.

The implementation phase of the directorate's policies was more complex. The National Software Directorate had no executive power, which made policy implementation difficult (Clarke, 1995). Its role was to advise state agencies on strategy for the sector. It also advised the higher education sector on course, research and support needs. However, its control of the research budgets for the sector did allow it set to markers for the type of ventures that companies and third-level institutions should pursue.

To implement its major policies, it had to lobby its parent agencies. These were the Department of Enterprise, Trade and Employment and the state indigenous industry development agency, the Industrial Development Authority (IDA). This changed in 1994 when the IDA was split and a new agency, Forbairt, was given responsibility for indigenous industry. The directorate came under its umbrella. It also had to engage in lobbying of government departments and the EU to have its policies implemented. The "policymaking loop" was closed with a new rigorous independent evaluation stage of its policies and operation. This was a pre-condition of the EU funds that financed the majority of the directorate's work over this period. The evaluation was

independent of the system and rigorous. Its methodology involved qualitative and quantitative measures that helped to refine policy, funding and the policymaking structure for the software sector. Its methodology included interviews with companies at the receiving end of policy, state actors and academics. This system for the first time led to accountability of the policymaking system, as a poor report could end a programme's funding in addition to the public embarrassment.

The first evaluation of the new policymaking system for software was conducted for the industry evaluation unit, Department of Enterprise, Trade and Employment (Clarke, 1995). The evaluation found the policymaking apparatus for the software sector needed serious restructuring. The assistance given to companies was often counterproductive and not tailored to their needs Clarke (1995, p. 13). Clarke found there has been no clear strategy or focus for the industry. Five separate state agencies gave grants for the sector, depending on the company's geographical location. The industry felt that the state's support mechanisms were poorly directed and too bureaucratic (Clarke 1995, p. 81; Buckley, 1993; McCafferty, 1996, p. 68).

In addition to formal, explicit policymaking, the literature has identified three areas where the state exerted policy influence on the software sector's development (Gregg, 1991; Ó Riain, 2004; Buckley, 1993). The first was in the agency's role as principal financier via equity and grants to the sector.

State financing mechanisms had penetrated the software sector by 1993, with 56% of software companies in receipt of some state assistance, usually grants (Buckley, 1993). Only a quarter had been in receipt in 1985 (Pitcher, 1984). The state had equity

stakes in 55 software companies by 1992. This represented almost a quarter of all state equity investments (Clarke, 1995, p. 81). Such financial involvement had a two-pronged effect on policymaking. This created an ongoing relationship, which became an important channel of information exchange between the state and companies (Ó Riain, 2004, p.95). The state had a financial interest in ensuring companies developed. It also allowed the state, as a key investor, to influence the development of software companies. It usually linked its investments to companies entering product development - a harder, riskier but long-term more financially beneficial business.

The state, primarily through EU programmes, was an important stimulus to R&D spending in the software industry. Its control of these funds helped it direct policy on research. In the nine years between 1985 and 1994, some €63m was received by Irish colleges and industry under the EU Framework European Strategic Programme on Research in Information Technology (ESPRIT) programme (Clarke 1995, p. 34). Most industrial partners in this research with colleges were TNCs. Three of the fastest growing software companies in Europe in the mid-1990s - Iona Technologies, Baltimore Technologies and WBT Systems - emerged from the research done using these ESPRIT funds. Three software research centres attached to universities were also established in 1991 with EU aid and had mixed success.

All the relevant studies agree that the state's most important influence on the development of the software sector was its investment in relevant education. This created a highly qualified, relatively cheap workforce (Ó Riain, 1998 and O'Malley et al, 1997; Pitcher 1984; Buckley, 1993; National Software Directorate, 1992, 1994, 1996, Clarke, 1995; National Economic and Social Council, 1997; Northern Ireland

Software Federation, 1999; Kerr, 1998). The surplus output of graduates from the new electronic engineering courses helped to grow the software sector (Gregg, 1991). The Republic's software industry had a 17-fold increase in employment between 1985 and 1993, far outpacing international growth in the sector (Buckley, 1993).

In summary, a significant institutional shift had taken place in the policymaking mechanism for the indigenous software sector since the late 1970s. It is evident that a new model, described by Ó Riain (1999, 2004) as the “Developmental Network State”, had evolved for policymaking. This close policymaking alliance between autonomous state bodies and the techno-entrepreneurial class, as Ó Riain (2004) shows, was more akin to the Israeli and Taiwan model than that of Japan. Ó Riain said: “The DNS [Developmental Network State] in Ireland deals with a large portfolio of companies and aims to promote a particular set of activities – R&D, business development, increased employment and product-exporting – rather than shape specific decisions or create particular industrial structures” (2004, p.109).

By the mid-1990s, the policymaking structure for software had much greater involvement of the existing software companies. But much of the policy implemented was still generic for all sectors, not tailored for the unique characteristics of the industry. Many of the problems identified with the policymaking system by Pitcher's study (1984) were still apparent a decade later, as evidenced by Clarke's (1995) and McCafferty's (1996) studies. While access to state assistance for the sector had increased over the period, the institutional structure for accessing it was unwieldy (Clarke, 1995; McCafferty, 1996).

This was evidenced in Clarke's finding (Clarke, 1995), which revealed that those software companies grant-aided by the state between 1989 and 1993 had not performed as well in employment growth as those not assisted. Clarke hypothesised that much of the state-aid policy toward software companies could be counter-productive as it was implemented without expertise within the state's apparatus. There was little take-up of R&D grant-aid.

The policy goals of the government – increased exports and employment from the sector - were not necessarily the policy goals of companies in it (McCafferty, 1996). The software sector, however, exceeded its targets set in the national plan, with 400 companies, 80 of which were overseas, employing over 8,500 people (Clarke, 1995). She found that the 80 overseas software companies accounted for about 90% of the €2.5bn revenues of the Irish software sector in 1993. These overseas companies included most of the world leaders in software like Microsoft, Oracle and IBM, who had established their European bases in Ireland.

The initial role that these and Irish policymakers played in the nascent indigenous interactive media industry is analysed by two studies (Preston, 1996; Preston and Kerr, 1997; Kerr, 1998; Hazelkorn and Murphy, 2002). Their valuable empirical studies document the emerging policymaking framework for the indigenous interactive media sector in the mid-1990s. They identify how the state began to treat interactive media as a distinct sector from software in terms of policymaking by the late 1990s. This was a period of sporadic policymaking for the indigenous interactive media sector. There is, however, a significant gap in the academic literature as to how the public policymaking process evolved for the sector from the mid-1990s onwards.

Gap in the Irish public policymaking literature

The gap in the literature will be filled by conducting a case study of the policymaking process used to develop the indigenous Irish interactive media industry over a ten year period. There is the main case study - that of the state's institutionalised policymaking process towards the indigenous interactive media sector outlined in chapters 5 and 6. Embedded within this is a sub-unit. This is a case study of six indigenous interactive media companies with an emphasis on their interaction with the Irish state's policymaking apparatus, outlined in chapter 4. This methodology has been empirically tested in many studies such as Union Democracy (Lipset et al, 1956). The next chapter, Methodology, details how this case study was conducted. The analysis of the case study in chapters 4, 5 and 6, will look at how this policymaking process evolved for the interactive media sector from the mid-1990s onwards. These and the conclusion, chapter 7, will assess what model was used and if it was a new one. It will also establish if policy formation for the sector was privatised.

Conclusion

This largely exploratory study does not fit readily into a stream of existing research, so a multi-method approach is being employed. The first issue is the time span over which public policymaking should be studied. More contemporary research takes a wider parameter to include triggers and agenda setting at one end and evaluation at the other (Sabatier 1999; Gerston, 1997; Bochel and Bochel, 2004; Minogue, 1993). These broader parameters were chosen for this study. Based on the empirical research from the literature, a 10 year time span for the study was chosen.

A number of research questions emerge from the literature review. Firstly, there are methodological ones relating to how to measure the policymaking process. The three central ones for this study are: What should be the time span over which public policymaking should be studied? What the boundary specifications should be, i.e. at what point do you start and what point do you finish measuring the policymaking process? What framework/s should be used to measure it? A subsidiary question is do we examine only formal policy, or also explicit and omission? These methodological issues are addressed in the next section on the approach to the thesis.

The gap in the Irish public policymaking literature has been identified regarding how the public policymaking process evolved for the interactive media sector from the mid-1990s onwards. What model was used? Was it a new model? How did this model evolve? Was policy formation privatised?

To order the research, it was decided in accordance with the literature, to break the analysis of policymaking into stages. The stages chosen as the categories for this study represent a synthesis of the stages outlined in the more contemporary literature (see table 2.3 in this chapter). These stages are: Agenda setting/triggers; Policy formulation and legitimisation; Implementation and Evaluation (as it relates to policy formation). This chapter showed that public policymaking is a dynamic process. Events, actors and political institutions may come together to solve problems but the outcome is unpredictable. This chapter demonstrated that there is no universally accepted framework for measuring the public policymaking process, but instead various methods. The merits and flaws of a selection of these frameworks, methods and guides were outlined in this chapter.

In Ireland, various studies have looked at public policymaking to develop the enterprise sector. Ireland's nascent indigenous software is an example of this. It had no effective policymaking apparatus in the 1970s. But through institutional shifts by the 1990s, a policymaking alliance between the state and a techno-entrepreneurial class had created an innovative milieu with global reach. The interactive media sector spun off from it and used much of its infrastructure.

The literature review raised several questions and confirmed gaps in knowledge. Principally how did the public policymaking mechanism work for the indigenous interactive media industry? What, if any, policymaking model was used? Was this a new model? How did this evolve? To address these questions, this chapter outlined a selection of techniques – agenda setting, formation and evaluation as it relates to policy formulation. The next chapter, chapter 3, Methodology, details how these provided an analytical lens to produce the analysis for chapters 4, 5 and 6.

Chapter 3

Methodology

Introduction

This chapter outlines the methodological approach of this study. It details the multi-method approach taken. This chapter highlights that central to this was a historical case study of the policymaking process used between 1994 and 2004 towards developing Ireland's indigenous interactive media industry. These were completed through a combination of data from documents and interviews. To put policymaking in context, an analysis of the interactive media sector was also undertaken. It principally used embedded case studies of six interactive media companies which supplied the qualitative data. This was supplemented by quantitative data. This chapter outlines the methodology behind two surveys of the interactive media industry, in 2001 and 2005, undertaken to provide quantitative data.

How this research was conducted

This study is primarily revelatory, exploratory, descriptive and inductive. The public policymaking literature consists of different frameworks that attempt to explain the process. The literature has been developing, as described in chapter 2, to give greater consideration to influences outside the immediate official policymaking network and also the effect of "learning by doing".

Sabatier (1999, p. 3) and Hayes (1982, pps 6-7) outlined the inherent reasons why formulating an appropriate research methodology is difficult. It involves a large number of decision points, the presence of a lot of poorly defined participants and multiple programmes over a long time span.

The indicators developed for this study had to capture a structure that changed over a 10-year time period and highlight significant patterns. They had to describe a process, along with its inputs and outputs. They had to gauge the magnitude of influential factors on public policymaking. While documents outlining programmes and policies, both enacted and un-enacted, were valuable, the process leading to them also had to be examined. The agenda setting that fed into the policy process also had to be understood.

To this end, minutes of relevant meetings, briefing documents, extracts from electronic databases and other documentation used in the policymaking process were analysed. The content of this documentation was analysed, which revealed the priorities and inputs into policy. A point of caution here is that all important information feeding into policymaking may not have been recorded. The records that were obtained were crosschecked by interviewing relevant actors. Used together, they present a more complete description of policymaking than either one would by itself.

The methodology used for this study was based on the following theory of knowledge creation. Perspectives on what constitutes knowledge about the world are known as paradigms. A paradigm is defined as a set of basic beliefs or assumptions about knowledge and how it is created (Guba and Lincoln, 1994). Epistemology is one of the three components of a paradigm. It refers to different ways of establishing what can be accepted as real. The other two elements of a paradigm are ontology and methodology. Ontology refers to different propositions of what reality is. A methodology is linked to epistemology. It relates to how the researcher can discover what he/she believes can be known. Epistemology represents the starting point of the

knowledge creation process as it shapes how facts are collected and understood. The research here is inductive as against deductive. The deductive approach was rejected, as it was not possible to state in advance of the fieldwork what the main variables are. Boyle (1999, p. 43) defines the inductive approach as follows: “In inductive analysis the evaluator tries to make sense of the situation without imposing pre-existing expectations. The search is for patterns and trends that emerge in the case(s) under study, which identify the important variables, without deciding in advance what those variables will be.” There was a need before commencing this study to examine the implications of the methodology chosen for this research for its appropriateness, validity and reliability.

Data collection methods

(1) The case study

The case study is the appropriate and preferred method for this study, as this research poses such questions of “how” and “why” about the public policymaking process for the Irish indigenous interactive media sector. What was pertinent was that it explored the phenomena in unison with its contextual conditions.

The “what” question of the case study (What was the policymaking process in reality?) was investigated through over 200 primary records, mostly unpublished and more than 20 interviews and briefings with identified key actors. The “how” question was answered through the use of the same sources. The “who” and “why” questions were addressed largely through interviews and archival records, but in less depth than the first two questions.

The time period of the study, between 1994 and 2004, meant that it was relatively contemporary. Primary qualitative evidence, such as interviews with key actors, was available, as well as contemporary documentary evidence. A high proportion of the requirements for a research methodology were met by the method for conducting a case study outlined by Yin (1994). Yin defined the case study as: “An empirical inquiry that investigates a contemporary phenomenon within its real-life context especially when the boundaries between phenomenon and context are not clearly evident” (Yin 1994, p. 13).

The case study copes with the technically distinctive situation in which there will be many more variables of interest than data points and one result (Yin 1994, p. 13). It relies on multiple sources of evidence, with data needing to converge in a triangulating fashion. Yin (1994, p. 13) also suggests that it can be a useful guide to data collection and analysis if theoretical propositions are developed before the fieldwork. The literature (Sabatier, 1999; Gerston, 1997; Hill, 1997; Stewart, 1982) provided a rich theoretical framework and guidance for designing the study and collecting the data.

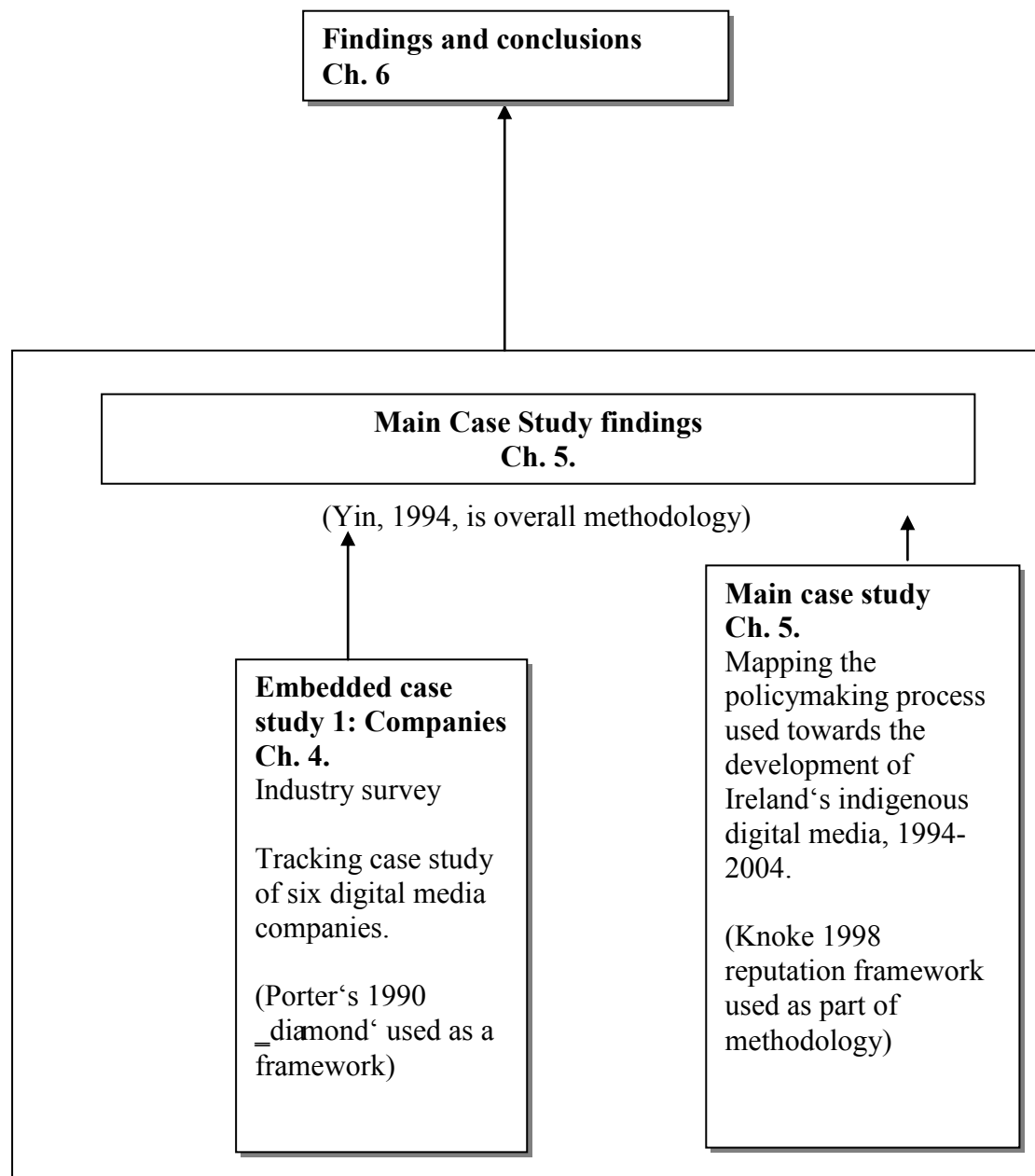
Scholars, however, have expressed concern on the validity of case studies. To overcome these, protocols outlined by Yin (1994) were incorporated into the research design. These protocols are outlined in appendix A and B. For example, these gave a method for the impartial selection of institutions to study, to overcome the risk of bias. Little could be done to address the third concern, the lengthy time span to conduct the study. It took over eight years for this study but this is less of a problem, as the duration does not impact directly on the reliability of the findings. The most

serious disadvantage in using a case study is that it provides little basis for scientific generalization. Yin, however, counters this by stating that a case study, like a laboratory experiment, is generalizable to a theoretical proposition and not to populations or universes (Yin 1994, pps 10, 30).

The case study used for this research is a single embedded case study. There is the main case study - that of the state's institutionalised policymaking process towards the indigenous interactive media sector outlined in chapter 5. Embedded within this is a sub-unit. This is a case study of six indigenous interactive media companies with an emphasis on their interaction with the Irish state's policymaking apparatus, outlined in chapter 4. This methodology has been empirically tested in many studies such as Union Democracy (Lipset et al, 1956). The methodology used in this study is outlined in figure 3.1 following.

Multiple case studies of public policymaking across different sectors or geographical areas could have been undertaken and compared. This approach was rejected. This was because the introduction of the Freedom of Information Act in 1997 provided an opportunity to observe and analyse in Ireland a phenomenon previously inaccessible to social scientific investigation. Yin (1994, p. 40) contends that it is a justifiable rationale to use a single case study if it will, like in this case, be revelatory. For the first time in Ireland, a contemporaneous study of public policymaking could be done with full legal access, subject to some exemptions, to policymaker's records, electronic and manual

Figure 3.1: Study's methodology outline



Source: By author.

The investigation, unlike previous ones, was not reliant on published information, willing co-operation of state officials or their unchecked explanations. These sources were used, but were underpinned by the new legal rights under freedom of information legislation for full disclosure of records. This meant that an in-depth and

well-executed study might provide a revelatory case study. It allowed time for appeals to be made internally and then to Ireland's Information Commissioner, where access to state records were denied or partly denied under the freedom of information legislation. This facilitated a better contribution to knowledge than several superficial comparative case studies.

There are no known equivalent projects that have used the Freedom of Information Act in Ireland to this extent. But it has been used extensively for academic research in America since its introduction there in the late 1960s. It has also been used to a lesser extent in Canada, Australia and New Zealand, since legislation was introduced there in the last two decades. In Sweden, which has the oldest and most accessible freedom of information legislation, it has been used for academic research for over 200 years.

(2) Selection of sub-units of analysis

There are no set criteria for the number of case studies to be undertaken (Yin 1994, p. 50), but instead it depends on the certainty required in the results. Similar types of research (Kerr, 1999 and Ó Riain, 1999) each used less than five case study companies.

The selection procedures for actors to investigate within each of the two units of analysis is outlined in sections three to five of the case study's main protocol and two subsidiary protocols (see appendices A and B). The first stage of this research was to establish who the key actors or organisations in the public policy domain are in relation to public policymaking and the indigenous interactive media sector. Knoke's reputation methodology (Knoke 1998, pps. 507-30) was used. A list of policy makers

was drawn-up based on the literature review, documentation from agencies and informal telephone interviews with actors familiar with the sector. Using an e-mail followed-up by a telephone call, 11 officials of organisations in public policymaking were contacted and asked: “Who do you think are the organisations which stand out as being especially influential and consequential in formulating public policy for the indigenous interactive media sector in the last eight [this was asked in 2002] years?”

The response rate was 60%. Three contacts were tried with each agent. The officials were also asked to supply names in other organisations of people who could respond.

The following were the agencies and departments mentioned consistently by the agents and there was a fair deal on consensus amongst them. Those mentioned only once were excluded from the study. They are ranked in alphabetical order below:

- a) Department of Finance.
- b) Department of Enterprise, Trade and Employment (formerly Department of Industry, Trade and Commerce).
- c) Department of Public Enterprise (formerly Department of Transport and Communications and since 2002, the Department of Transport and separately, the Department of Communications, Marine and Natural Resources).
- d) Department of Taoiseach [Prime Minister] (Information Society Commission and Media Lab Europe projects are directed from this department).
- e) Enterprise Ireland (formerly part of IDA Ireland until 1994, then known as Forbairt until 1999 when restructured to form Enterprise Ireland).
- f) Forfás/ Irish Council for Science Technology and Innovation.
- g) National Software Directorate (a sub-agency of IDA, later Forbairt and then Enterprise Ireland).

Relevant individuals were identified in these agencies though informal contact and they were then contacted in writing. See letter template in appendix D. Key

unpublished records in these agencies were also identified and requested either voluntarily or through the Freedom of Information Act, 1997. See template for these requests in appendix E.

For the next part of the study, to measure the input of the industry into the policymaking process, a selection of 11 potential case study companies was made in 1998. This was done from a stratified listing of all those companies that could be identified as operational in the Republic, circa. 100, from 1994 onwards. They were stratified into three classes – large, over 25 employees, small, more than two and home office, two or less. Over 25 was large for companies in the indigenous interactive media sector, but would be considered small in the overall population of companies in Ireland. The aim of this stratification was not to prove a statistical sample of the industry, but to see how interaction occurred between different size companies in the sector policymaking process. This is acceptable as findings are being generalised to a theoretical proposition and not to the population, i.e. the entire Irish indigenous interactive media industry. The case study proved feasible on four of these companies and included one that no longer traded in Ireland. Two start-up companies were added in 1999 to the case studies to provide the research with insight into the evolving environment for embryonic interactive media companies.

The case study subjects were unwilling to participate, or would do so only under non-viable conditions attaching to publication. So it was agreed that the names of the companies would be anonymous for five years after 2004. If they were still in contact with the enterprise agencies at this point, 2009, they would not be named in the thesis for another five years. The principle reason stated was commercial sensitivity coupled

with the effect it could have with their relationship with the state enterprise agencies, an important funding sources. Another difficulty posed was that state enterprise agencies do not have to disclose information if they can prove it is commercially sensitive. In the end, the company case study results were aggregated under various categories drawn from Porter's diamond model for international competitiveness (Porter, 1990). This helped to ensure that no comments were directly attributable to one company. Details of those involved were not published until five years after 2004 and then only if their relationship with the enterprise agencies had ceased.

(3) Document review

The document review provided evidence for the different case studies that were undertaken as part of this study. Many documents were cross-checked, insofar as possible, to overcome the problem of miss-recording outlined by Yin (1994, pps. 81, 82). –It is important in reviewing any document to understand that it was written for some specific purpose and some specific audience other than those of the case study being done... By constantly trying to identify these conditions, you are less likely to be misled by documentary evidence and more likely to be correctly critical in interpreting the contents of such evidence.”

For example, in this study, records, electronic and paper-based, within the state enterprise agencies on their dealings with the case study participants, were obtained (subject to some limitations on commercial confidentiality). These both corroborated statements from company executives but also showed the relationship between the parties from the opposite viewpoint. For the case study of the public policymaking

process towards developing the indigenous interactive media industry, in chapter 4, the documentary sources used were:

- a) Reports and unpublished minutes of internal meetings and correspondence in government departments. Released with some data exempted.
- b) Consultancy reports prepared for state agencies. The various early drafts of these were also obtained.
- c) Media coverage of the sector.
- d) Electronic case files kept on the companies by Enterprise Ireland (released with some data exempted).
- e) Copies of correspondence between the state enterprise promotion agencies and the departments of Public Enterprise (subsequently split into two departments), Enterprise and Employment, Finance and An Taoiseach (released with some data exempted).
- f) Copies of files and minutes of meetings held by the Department of An Taoiseach (prime minister) concerning interactive media (released with some data exempted).
- g) Annual reports and grant giving reports of: Enterprise Ireland (and its predecessor Forbairt), The National Software Directorate and Forfás, relating to grant-assistance to the case study companies. This was released with some data exempted on commercial grounds.
- h) Reports and unpublished minutes of various government appointed committees, steering groups and advisory bodies. (Some of this was released with some data exempted).

Much of this documentation is not published but was released for this study under the Freedom of Information Act, 1997. Previously one would have had to wait at least 30 years to access this documentation under the archives legislation. This meant that for

the first time, a study of this nature benefited from also contemporaneous access to state documentation. The follow on benefit was that their contents could be cross-referenced against interviews with the actors involved in making the records.

Accessing this documentation also required several appeals where parts of documents were exempted from release. The focus was on finding out the information sources being used by state officials, their internal synthesis of this information, internal debate, authorisation procedures and evaluation.

For the case study of six indigenous interactive media companies in chapter 4, the documentary sources used were:

- a) Accounts and annual returns filed in the Companies Registration Office, Dublin and American Securities and Exchange Commission.
- b) Company brochures and business plans.
- c) Media coverage of the companies.
- d) Electronic case files kept on the companies by Enterprise Ireland (released with some data exempted).
- e) Copies of correspondence between the companies and Enterprise Ireland, Department of the Enterprise and Employment and other state bodies (released with some data exempted).
- f) Copies of files and minutes of meetings held by the Department of An Taoiseach (prime minister) concerning companies (released with some data exempted).
- g) Annual reports of Enterprise Ireland relating to grant-assistance to the case study companies (released with some data exempted).

A focus in the review was to find any evidence of the companies' interaction with the state enterprise promotion agencies or government departments relating to policy for the sector. This document review was ongoing throughout the study as respondents identified additional documents for review.

(4) Site visits

All case study companies were visited on at least one occasion. A site visit to Malaysia's Multimedia Super Corridor and Cyberjava, its "digital" administrative capital was also undertaken in July 2000. A visit to Singapore also took place. The Massachusetts Institute of Technology Media Lab in Boston was visited in 2007. It is internationally recognised as a key international research centre for interactive media. Dublin's Digital Hub, the Cube digital media incubation centre, Dun Laoghaire Institute of Art, Design and Technology, Microsoft's EMEA headquarters, Dublin, Google's EMEA headquarters, Dublin, and the National Digital Research Centre, Dublin, were all visited in late 2008. These visits, coupled with briefings from state and local officials, helped to crystallise the common issues facing states in formulating public policy for the development of their interactive media sector.

(5) In-depth interviews

Qualitative interviews are problematic because an individual's recall of activities that occurred, not to mention why they happened, are subjective and can be inaccurate. To overcome this problem of post hoc research, the study used a) cross referencing between different interviewees and b) cross checking against records created by the individuals and others.

A semi-structured interview was used. The questions the investigator should answer after the interviews with primary sources were used to guide the interviews. These are outlined in Section 7 of Case Study Protocol 1 (see Appendix A).

This included trying to identify the triggers involved in their formulation of programmes or policies. Was it pro-active or re-active? Then looking at how, internally, they assessed the options and came-up with solutions. The fourth element was to assess their internal approval chain for having policies put into practice and then evaluation of them. A similar structure was adopted for the officials of the Irish state enterprise promotion agencies. (See Section 7, appendices A and B for details of this).

A different approach was adopted for the interviews with management of the six indigenous interactive media companies used. They had shorter initial interviews and then were periodically contacted throughout the study to assess particularly their interaction with the state agencies. Section 7 of the Case Study Protocol 2, was used to guide the interviews. A difficulty arose in four of the six cases when the companies went out of business during the period of the study. However, where post-company closure interviews took place, these proved very beneficial to the study.

Shorthand notes were taken during the interviews. The interviews were transcribed and reviewed and themes and issues were identified. Key informants included economic advisors to the Irish government, principal officers in relevant government departments and managers in the enterprise promotion agencies dealing with the interactive media sector.

Semi-structured interviews and/or participant observation at various intervals, between October 1998 and October 2004, took place with the case study companies. The built-in longitudinal nature of the case studies means that more than just a snapshot view was taken. Instead, the case study could track changing relationships, market conditions, technology and other factors. The significance of “learning-by-doing” by both companies and state policymaking actors could also be studied.

(6) Numerical data collection

While this study was principally case study based, a survey was undertaken to augment the research and provide statistical evidence. This desk-based survey used a protocol devised by Shaw et al (1997). Significant evidence was emerging from the early research showing that there was a clustering of interactive media companies, particularly in south inner city Dublin and industrial estates in the city’s south suburbs. This had important implications for the policymaking process. To investigate this phenomenon, a survey was undertaken in March 2001 to map by staff size, age and location the sector in Dublin.

This involved cross-referencing industry directories, telephone directories and filings by companies in the Companies Registrations Office, Dublin. A telephone survey/e-mail survey was also undertaken where there was doubt about the details of a company. The result was a map showing the dispersion of companies in Dublin (figure 4.2) and a table (Table 4.3). As both surveys covered the entire universe of Dublin interactive media companies, it is possible to generalise their findings to the full population of interactive media companies in the capital.

(7) Data Analysis

The qualitative interview data, the quantitative findings from the analysis of documentary evidence and statistics, were integrated and are presented in chapters 4 and 5. The data was synthesized into a case study narrative to establish the study's findings in chapter 5.

(8) Case study report

The analytic strategy for the case studies was to write up the findings for each individual case, be it a company or institution, as the information was collected. This was kept in both a manual and electronic (Microsoft Word) database. This descriptive information was written up, followed by explanatory information for each unit of the case study. The four dominant analytic techniques – pattern matching, explanation-building, time series analysis and programme logic models were used (Yin 1994, p. 102). Each stage of the writing up had a different series, or level, of questions posed to the evidence to assist in the analysis adopted from Yin (1994, p. 71). These individual case studies were then subjected to Level 2 questioning, i.e. questions asked of individual cases. A cross-case analysis was then done by writing-up descriptive and then explanatory across institutions (main case study), cross company and industry survey (embedded case study). They were written-up in a thematic-analytic structure. These findings, outlined in chapter 5, were combined and subjected to Level 3 questioning. These are questions asked of the findings across multiple cases and the findings outlined in chapter 5. These findings were then combined with the literature review in chapter 2 and subjected to Level 4 questioning. This is a questioning of the entire study. This analysis is presented in chapters 4 and 5. Finally, this analysis was subjected to Level 5 questions - normative questions about policy

recommendations and conclusions, going beyond the narrow scope of the study. These conclusions, findings and suggestions for further study are contained in chapter 6.

Chronology of research

The first phase of this study was desk research and interviews to identify the policymaking process employed by the Irish state between 1970 and 1997 aimed at developing the indigenous software industry. This phase took place between 1997 and 1998. This was because up until the mid-1990s, interactive media was considered by policymakers to be a part of the software industry. The desk research also broadened to look at the Irish government's policymaking mechanisms for enterprise development from the foundation of the state in 1922 to date to give the study an historical context.

This literature review was broadened further to examine literature explaining how high tech development had taken place internationally, but particularly in America. Singapore and Malaysia, where the governments were investing heavily in trying to create interactive media industries, were also visited. The aim was to put the research into an international context and look for patterns and examine the key debates. The desk research was then refined further to look at theories of policymaking in an attempt to find suitable frameworks and/or methodologies to assist in this study. Throughout this literature review process, the key research questions were being developed; not only those questions of interests to scholars in Ireland, but internationally too. These would then focus the systematic empirical research, which

was to follow. A cataloguing and archiving system was put in place for the study. Classes were also attended in statistics and other relevant areas.

Yin's 1994 case study methodology was chosen. There was to be one main case study – the policymaking process for interactive media in Ireland and a sub-unit feeding into it. The sub-unit was the six case studies of indigenous interactive media companies. Definitions were also established for “interactive media industry”, “indigenous” and “public policymaking” and time parameters were set for the study, based on previous similar studies. A case study protocol was established (see Appendix A) with specific questions to ask interviewees and also of the data collated during the interview.

The next phase was to devise and refine the multi-method research approach, taking into consideration techniques used in similar national and international studies. The fieldwork phase then began. This was between 1998 and 2004. Much work was undertaken to get the co-operation of the eventual six case study companies. Visits were made to them and interviews undertaken with key executives. This continued up to 2004, albeit with a smaller number, as only two remained in business.

The next phase was the fieldwork relating to the policy process itself. This was between 1998 and 2005. Firstly the institutions to be studied were identified using Knoke's (1998) reputation model. The next was to collect the relevant documentation. This involved making requests, via Freedom of Information and for voluntary disclosure for identified key documents. Appeals then had to be made for any denial or part denial of Freedom of Information requests. The documentation was then

reviewed. The people to be interviewed and other sources were also identified using Knoke's (1998) reputation model and document review.

These individuals were from Government departments, Enterprise Ireland, Forfás and industry lobby groups. Two surveys of the interactive media industry in Dublin were also undertaken as part of the research in 2002 and again in 2006. This was to give a profile of the sector and present quantitative data.

Two databases were established – both using Microsoft Word and physical archives of interview tapes, documents and transcripts. One database was for the case study companies and another for the policy process.

The final phase, between 2005 and 2007, was to analyse the data, make conclusions and write it up and edit it. Elements of the write-up were sent back to some interviewees for accuracy checks. The first draft of the research was made in 2005 and subsequently edited significantly and focussed further in August 2006 and again refined further for August 2007 and June 2010, based on feedback.

Reflections on methodology used and approach

The multi-method approach chosen for this research generated several legal as well as ethical issues. The first issue was a legal one. As one of the first major academic research studies to use the Freedom of Information Act in Ireland, the Irish case law on what documentation was exempted from release generally under the confidentiality clauses of the Freedom of Information Act 1997 was not developed. Thus Canadian, Australian and New Zealand case law relating to freedom of information, principally

confidentiality, had to be applied by state officials. These jurisdictions had similar freedom of information acts to Ireland. The Irish Freedom of Information Act 1997 has two classes of exemption. The first is absolute exemption and generally relates to national security and international relations. The second class is an exemption subject to a balance of public interest test. Public interest is not defined in the legislation but is generally interpreted as being in the welfare of the public. These latter exemptions generally concerned confidentiality, particularly commercial confidentiality.

There are generally three tests of confidentiality (Welsh et al, 2005, p. 274). Firstly, the documentation must have the necessary quality of confidence. Secondly, it should be shown that it was imparted in circumstances imposing an obligation of confidence. Thirdly, there must be unauthorised use of the information to the detriment of a party. Public bodies, however, have a stronger test of detriment than private individuals (Welsh et al, 2005, p. 291). Public bodies must show that the disclosure was harmful to the welfare of the public, not just that they would have preferred to keep documentation confidential. Officials ensured that documentation released for this study did not breach confidentiality. Where it did, parts were blanked out or omitted. Where these omissions were appealed, firstly a more senior official would re-examine the documentation. Then, the Information Commissioner would examine the omissions. Both sides could make representations of their case during this appeal mechanism.

This addressed the legal issue. Then there is the ethical question of whether it is correct to use documentation generated for one specific purpose – policymaking – for another. The act in Ireland was not generally retrospective to before 1997. Thus civil

servants and private consultants writing the documents used in the research would have been aware, or should have been aware, that such material could be released to the public. All civil and public servants had undergone awareness training before the legislation was enacted. Private consultants undertaking work on behalf of them, which represented a large number of the documents accessed, were also given written notification before undertaking the contract that the material was likely to be subject to public disclosure, save if marked and justified as confidential.

Having access to the Enterprise Ireland database in relation to its contacts with the case study companies posed further confidentiality issues. But again, officials were able to blank-out or exclude parts of documents that fell under one of the 11 exemptions to the act, principally the commercial confidentiality clause. The fine balance between transparency in public policymaking and the need for policy makers to have a degree of confidentiality saw the Freedom of Information Act amended in 2002. This revision has since severely curtailed the release of documents relating to the policymaking process for future research projects.

Self-evaluation on methodology

In this section, written after all the research was completed, there is an evaluation of the methodology used. This was purposefully a study of a new emerging indigenous sector with global reach. In retrospect, most of the investment decisions by the state on infrastructure, such as telecommunications connectivity, laws on tax, copyright and electronic commerce, were aimed at keeping the existing multinational software companies in Ireland. They were also aimed at making Ireland an attractive location for TNCs in this area. Most of the employment that came in the interactive media

sector was from TNCs new to Ireland, such as Google, Facebook, Yahoo, Amazon, e-Bay, Goa and Electronic Arts. The decision of these TNCs in the wider interactive media area to locate in Ireland had both positive and negative effects on the development of the indigenous interactive media sector. For example, the indigenous companies complained that these TNCs took skilled specialist labour, their most important assets, from the indigenous companies who could not compete in terms of conditions of employment. But what the study did not look at was the benefits, if any, that the indigenous interactive media companies enjoyed from clustering close to the TNCs. The only element examined in detail was TNCs being first customers of the early interactive media companies. Part of the state's policy in developing the Digital Hub was to create this cluster effect to benefit both TNCs and indigenous companies. Although not central to the study, another interesting area to explore in more detail would have been the role of IDA Ireland, the inward investment agency, in the policymaking process for the sector. It had begun to target the interactive media sector in the mid-1990s as a sector in which it could attract fast-growing TNCs to Ireland.

Another shortcoming a lack of in-depth interviews with officials within Enterprise Ireland (and its predecessor Forbairt). Although several interviews took place with officials within the agency and there was access to their documentation under Freedom of Information legislation, several officials did not grant in-depth interviews. This was mainly on commercial confidentiality grounds. In addition, the agency's officials were learning a lot about the sector at the time and were reluctant to talk too much about it. These individuals could have provided the research with more information on their informal, but very influential, role in the policymaking process.

On the study of the policymaking process itself, it proved difficult to capture how the system took on board two outside forces that would subsequently prove critical for the interactive media industry. The first was the rate of technology change, particularly the rapid global diffusion of the internet over the study period. It completely changed the industry's dynamics. It led to the rapid decline of some companies and fast rise of others and moved at a much faster rate than the policymaking process. The second issue was the global nature of the interactive media industry. The results of the case study show how of the few companies that survived, the biggest two, SmartForce and EMD Plc, went out of Irish control. They subsequently reduced the number of Irish jobs and their generation of wealth within the Irish economy. It should be noted that SmartForce had created spin-offs that did stay within Irish control. The study was not able, however, to track all the spin-offs from these once successful companies and also where their key staff went. Hearsay evidence from company executives would suggest, however, that the case study companies like Nua Internet Consultants, SmartForce and Zartis.com, spun-off between them over 10 successful companies.

Neither the policymaking system or the measure of it in this study, was able to pay enough attention to the globalised nature of the industry. It is interesting to note that a similar fate of foreign takeover befell the leading Irish indigenous software companies. Of the ten indigenous Irish software companies with the largest turnover in 2001 (See Ó Riain, 2004, p. 106 for list) only one - Fineos - was in Irish ownership less than a decade later in 2010. Only one other, Datalex, remained headquartered in Ireland but the majority of its stock market quoted shares were in foreign ownership. The leading indigenous Irish software companies in 2001 – Trintech, Iona

Technologies and SmartForce – are no longer standalone entities after being taken over by American TNC companies. Baltimore collapsed too in the early 2000s.

While this study looked at some of the reasons for this propensity for successful indigenous firms to go into foreign ownership, it was not a core part of this research. Irish companies like CRH, Kerry Group and Glanbia, have grown to become TNCs, but in relatively low tech sectors like construction materials and food. By the mid-2000s, Irish companies had almost the same amount of overseas investments as foreign companies had in Ireland. But this phenomenon of foreign takeovers in high tech sectors, however, raises pertinent questions. Do small states have the ability to sustain indigenous high tech industries in a globalised market? This reflects the questions by O'Hearn (1989, 1998) referenced at the outset of this study about whether countries like Ireland are caught in an inescapable underdevelopment cycle. While this study did not test O'Hearn's theory, the empirical evidence suggests that it is an area worth further study. It could become applicable once companies in high tech sectors reach a certain size internationally. But the study clearly shows that small peripheral states can help engineer high tech indigenous industries like software and interactive media. Given the subsequent events in the Irish state, with the requirement of a financial rescue by the IMF and EU in November 2010, the importance of this study is heightened. There will be an inevitable domestic and international tendency to write-off all macro-economic policy pursued by the Irish state in the years leading up to it. The micro-economic policymaking system that evolved in Ireland in the 1990s and early 2000s will be viewed as totally flawed. As the country attempts to rebuild both its economy and international reputation, it will be important that its successes in this period are learnt from and built-upon.

Conclusion

This chapter detailed the multi-method approach of this study. It highlighted the centrality of the ethnographical historical case study of the policymaking process used between 1994 and 2004 towards developing Ireland's indigenous interactive media industry. It documented the protocols used for both the main and embedded, in the next chapter, case studies. The main case study is analysed in chapters 5 and 6. The embedded case study is analysed in the next chapter. It outlined the triangulation strategy to analyse this data that is employed in the following two chapters.

Chapter 4

Analysis of the Indigenous Interactive Media Industry's Interaction with the Public Policymaking process, 1994-2004

Introduction

This chapter puts in context the policymaking process and issues facing policymakers by charting the development of the indigenous interactive media industry in Ireland. Existing data was studied and two surveys were undertaken to provide qualitative data on the sector's development. This provides the overview of the interactive media sector between 1994 and 2004. This is outlined at the start of this chapter. This analyses how the industry developed on a geographical and sub-sector basis. To provide an in-depth understanding of the interactive media industry's relationship to state policymaking process, qualitative data on the sector's development was gathered. This was done through six embedded case studies of interactive media companies' interaction with the state over the 10 year period of this research. These were analysed under the categories that Porter (1990 p. 133) had identified as being part of his "diamond of competitive advantage" and starts with starting with firm strategy, structure and rivalry and covers other headings like related and supporting industries. Their findings were analysed and summarised in this chapter's conclusion.

Overview of Ireland's indigenous interactive media sector, 1994-2004

Ireland was one of Europe's pioneers in interactive media, effectively stumbling into it via involvement in software research, a key strategic mission of various government agencies since the 1980s. Interactive media had had many false starts over the past decades, with advances in technology failing to meet their market expectations. In the mid-1980s the computer science departments in some

universities around the world, including Ireland, were experimenting with both common networks and a standard CD-ROM format developed in 1983 by Sony and Philips. This new format allowed text, sound and graphs to be interacted with on a software platform.

The sector developed slowly until the rapid diffusion of Internet technologies in the late 1990s brought demand for interactive media products and new companies emerged to meet it. In the late 1980s and early 1990s, the costs and risk involved of any company going into interactive media were very high. It had increased due to a lack of platform standardisation internationally. For example, there were competing standards between CDi, CDo, CD-ROM and between Apple Macintosh, Microsoft-IBM and game consoles in the early 1990s. See Appendix H – a time line of interactive media advances.

Several of these systems were closed, which meant that those wishing to develop software for them had to pay a royalty licence to the hardware vendor. The small scale of the Irish market for CD-ROMs and availability of American and British multimedia titles, due to the common language, meant that Irish companies produced mainly bespoke work. Preston and Kerr (1997, p. 43) point out that most Irish multimedia developers in this period concentrated on European research projects, foreign markets and sub-contract work for large multinationals based in Ireland and abroad. The early domestic customers were in the heritage and tourism sectors. Several companies such as Financial Courseware (re-named Intuition Publishing), Mindware of Limerick, Electric Paper, CBT Systems and Interactive Multimedia Systems had success in producing training multimedia titles for overseas markets in the mid-1990s. Pixel Magic produced a top selling children's game for the German

market and a CD_ROM, Ceol [Music] that was marketed in New York. Pixel Magic ceased trading in 1998 when another game development contract for the American market got into difficulties.

The rate of growth of the indigenous interactive media sector was significant, expanding from 57 interactive media companies in Dublin in 1997 (Enterprise Ireland, 1999) to 242 by March 2000 (survey by author, 2001), directly generating an estimated 2,089 jobs. The sector can be divided into four distinct tiers: small 'home office' operations, small enterprises, large internationally competitive Irish and foreign-owned companies (see Table 4.1 following). The majority, 59 per cent of the companies in Dublin, were small enterprises with few staff, usually producing websites or engaging in maintenance and training on a contract basis for local companies (survey by author, 2001). These were generally located within a one-mile radius of Dublin city centre, and the only significant cluster to emerge was located around Baggot Street, in the south city centre. The bottom tier is home-based one-person operations concentrated in the north and south Dublin suburbs generally doing small-scale Internet development to service local businesses, accounting for 3.7 per cent of employment in the sector in Dublin and 33% of companies (survey by author, 2001). The larger multinational companies, like world leaders AOL and Microsoft, localized primarily North American interactive media content for international audiences in Dublin and provided customer service for the European, Middle East and African market.

Table 4.1: Dublin's interactive media sector, 2000 versus 2005

	No. Companies 2000	No. Employed 2000	No. Companies 2005	No. Employed (est.)
Home-based one-person operations	79	79	78	78
Small-enterprises (less than 25 staff)	144	360	158	395
Indigenous businesses* (25+ staff)	12	970	24	1,340
Foreign-owned businesses* (25+ staff)	7	680	18	1,987
Total	242	2,089	278	3,800

* Includes staff numbers in their interactive content related areas only.

Source: Surveys by author, March 2001 and August 2005.

By 2000, only about 12 indigenous interactive media companies had made the transition to what could be classed as internationally competitive operations, having originated as text based computer trainers in the mid-1980s. Of Dublin's five largest of such companies, four of them, SmartForce (now Skillsoft), Riverdeep, Intuition Publishing and Interactive Services, all then global leaders in their online training niches, trace their lineage to CBT Systems, a text-based trainer set-up by former salesman and teacher Pat McDonagh in 1983. These five companies had annual sales in 2000 of €179m and were valued around €2bn at that time (see Table 4.2 following). They accounted for more than 40 per cent of employment in the interactive media sector in Dublin. More significantly, they have produced a significant number of spin-offs in the localisation, research and related services areas helping to create a self-sustaining e-learning milieu in Dublin.

Originally concentrated in information technology and financial services, these products expanded into the American school curriculum, telecommunications,

healthcare, customer service and general management. Sub-contract website development work and localizing multinational publishers' interactive media titles for non-North American markets was also an important sub-sector.

Table 4.2: Interactive media's contribution to Dublin's economy, 2000

Rank by sales	Name	Total staff globally	Annual sales (€m) 2000	Description	Valuation
1.	Skillsoft (SmartForce)	1,200	€145m	Global leader in online IT training	€1,661m
2.	WBT Systems	66	€18m	Online training infrastructure	€40m*
3.	Riverdeep	410	€7.7m	Global leader in online high school learning aids	€605m
4.	Intuition Publishing	60	€5.4m	Global leader in online financial services training	€15m*
5.	Interactive Services	110	€3.7m	Online training for telecoms	€12m*
Total			€179.8m		€2,332 m

* Estimates based on private investments made in companies.

Sources: Nasdaq; Companies Registration Office, Dublin; Individual companies; Davy Stockbrokers; Goodbody Stockbrokers. March 2001.

(1) Firm strategy, structure and rivalry

Dublin emerged as the preferred location for 87% of the Republic's interactive media companies by 1999 (see figure 4.1 following). Its existing customer base, international airport and skill base facilitated interactive media's growth. The latter benefitted from the software sector's technical skill-base (interviews with case study

company executives). Cork and Limerick each had 4% of the Republic's interactive media companies and Galway had 3% (Enterprise Ireland, 1999).

There were logistical, commercial and psychological reasons why the interactive media industry might cluster in certain locations. A cluster is a spatial concentration of firms (Porter, 1990, p 287). A bird's-eye view of the location of interactive media companies in the Dublin city by 2000 illustrates the significance of this clustering (see figure 4.2 following) even within the city. By 2005 this was still evident. For the purposes of this research, case studies of six interactive companies were conducted. A discussion of the selection of these is in the methodology, chapter 2. These are listed following in Table 4.3. All the case study companies were all originally based in Dublin although one, SmartForce, moved its headquarters to San Francisco, California, in the early 1990s.

Figure 4.1: Spatial distribution of the interactive media industry in Ireland, 1999.

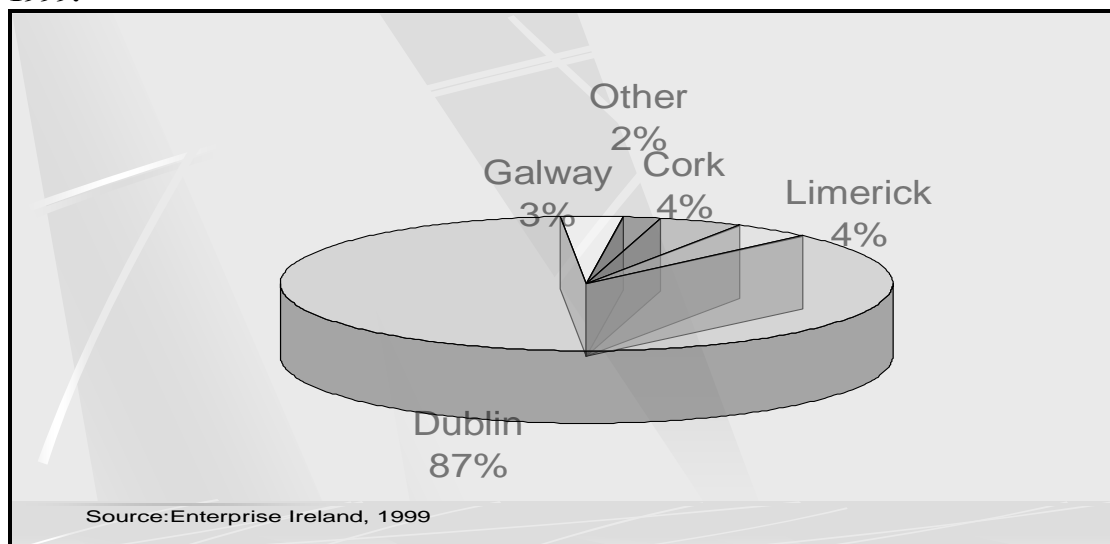
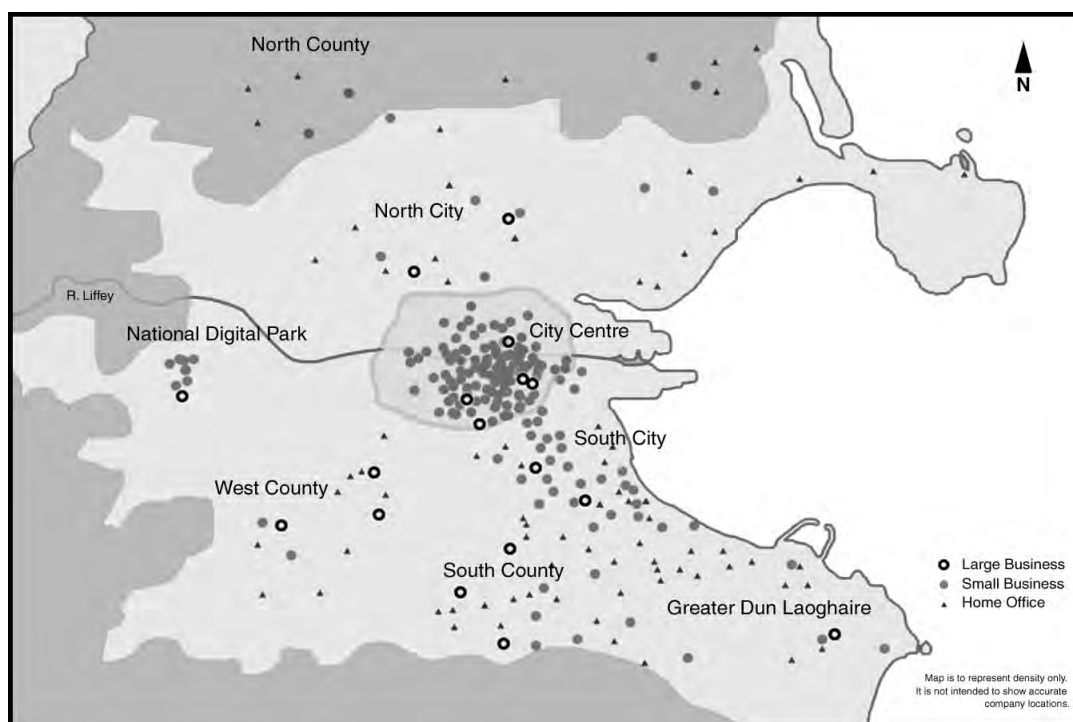


Figure 4.2: Spatial dispersion of interactive media companies in the greater Dublin area 2000



Source: Survey by author, March 2001.

Graphic: Digital Media Centre, Dublin Institute of Technology.

It also significantly grew its Irish operations at the same time. Another, EMD plc, moved its total operations to London in the late 1990s. Both moved their headquarters so senior management could be closer to strategic partners, larger customers and, thirdly, their main shareholders. According to the case study company founders, Dublin was chosen because it had the required skills at a relatively cheap rate internationally, supporting industries, supporting infrastructure and an international airport. Towards the end of the study period, the late 1990s, the availability of an increasingly sophisticated specialist skills, like e-learning localisation and infrastructure, became even more important in the selecting of Dublin but the relative labour cost advantage, compared, say, to London, had begun to decline significantly.

Table 4.3: Interactive media companies used as case studies in chapter

Name	headquarters	Sector	Employment*	2004 Status
Blue and Green	Dublin city centre	Bespoke web design	2	Ceased trading
Nua Internet Consultants	Dublin city centre	High-end transaction website design and online specialist news	32	Liquidated
Skillsoft (formerly SmartForce)	South Dublin city	Computer-based training for software	600	Taken over by US firm. Still trading
FGlobal	South Dublin suburbs	Web-based specialist training	2	Trading
EMD plc	South Dublin city	Real-time financial analysis	23	Taken over by UK firm. Ceased trading.
Zartis.com	West Dublin (Digital Park)	High-end transaction website design	14	Taken over by US firm. Cease trading.

- Full-time equivalent staff at height of operations between 1994-2004

Half the case study companies, Blue and Green, Zartis.com and Nua Internet Consultants were primarily in the service business. This was making and maintaining basic to sophisticated websites mainly for large domestic and international customers. In addition, Nua Internet Consultants, was in parallel running a large local news site and in the late 1990s, tried unsuccessfully to re-focus on producing software to allow large companies to publish on the Internet. The other three companies, FGlobal, EMD and SmartForce, were product orientated or provided online services and from the outset were aimed primarily at servicing clients in the United Kingdom and America. Two, FGlobal and SmartForce, developed computer-based training products and the third, EMD plc, specialised in providing interactive information for a specialist niche in

the international investment industry. These companies were based in areas where the barriers to entry were relatively low to medium; there were no legal, proprietary or highly sophisticated technical constraints.

There were legal, technical and scale barriers to entering some sub-sectors of the interactive media market. For example, several Dublin-based companies tried to develop interactive media game titles, one of the fastest growing interactive media sectors of the 1990s. But most of the Irish games companies had ceased trading by 2001. Games development was extremely high risk, capital intensive and highly skilled, with high barriers to entry for distribution and proprietary technology in game consoles.

Other fast growing areas of interactive media also had barriers to entry because of localised situations. Pornography, one of the few commercially success Internet content types of the 1990s, was ruled out due to strict Irish censorship laws. Internet retailers had some success in the local market but not internationally. The small domestic market of then 3.6m people, it could be argued, did not provide a sufficient launching pad for international expansion. Local news and information publishing was dominated by existing traditional media like RTE and The Irish Times using it as “loss leader” often to protect their franchise, not as a means to expand internationally. This provided an effective commercial barrier to entry into this online news market.

All the larger case study companies had to sell their products or services overseas from a very early stage of their development. This added significantly both in logistics, executive time spent travelling and also in cost control. The main sales

offices of three of the six case study companies were abroad either in England or America.

The physical distance of Ireland from key customers also created problems for interactive media companies. For companies operating internationally, it proved necessary for their continued growth to have a strong presence in London, San Francisco or New York. Three of the case study companies, SmartForce, EMD and Nua Internet Consultants, established sales offices in New York within three years of their formation. In Dublin there was a fair amount of information diffusion between companies through spin-offs, personnel moving between companies, social relationships, specialist magazines, general media and formalised education. One of the case study Internet service companies, Nua Internet Consultants, created over five spin-offs.

Four of the six case study companies targeted Britain from their start-up. The British market was 15 times bigger than the domestic one, more sophisticated and had few regulatory or other barriers to entry. Frequent, reliable and inexpensive transport links between Dublin and the main UK centres made it reasonably accessible. Most of the products or services being sold were in physical terms light so transport costs were insignificant. This effectively meant that their competition was also international from the outset. The beneficial element of the British market was that it was sophisticated and had high demands for quality and service. There was usually a cost advantage in operating from Ireland, due to currency and lower wage costs; however, this was rarely the deciding factor in sales. If products or services met British standards, they could generally succeed internationally. A satisfied large British customer, whose

company name was known internationally, often became the most important sales aid both in Britain and internationally for the case study companies. As contract size and sophistication rose, the physical distance between the case study companies' Irish headquarters and those of clients became a constraint.

The web-service companies, Zartis.com, Nua Internet Consultants and Blue and Green, also found it difficult to secure large international contracts. Although Nua Internet Consultants had cost advantage, it was not located in the customer's home country. The building of sophisticated web services for international companies required ongoing face-to-face customer contact and interpersonal relations built over a long period (interviews with company executive). Large international companies seemed largely unwilling to contract such work to companies on the other side of the Atlantic or the Irish Sea.

Having to become an international company at such an immature stage of several of the case study companies' development proved too difficult for them despite some modest successes. They had not sufficiently developed their internal procedures, project management skills or marketing and sales expertise. Dealing with local business culture, regulations and other factors, takes time and expense to develop that many of the case study companies lacked. They were constrained in moving into other European countries, which were generally less demanding and competitive markets, largely due to language and business culture problems, according to the relevant case study company managers.

Funding these offices abroad at such an early stage of development was significant but necessary to make sales in these markets. But even with a sales office based in these main markets, more senior executives and technical staff usually had to fly from the Dublin office for important sales pitches or contract negotiations. The extra cost incurred put the Irish companies at a competitive disadvantage. Most of the case study companies spent a lot of their existence trying to survive, existing on cash flow and bank loans, only to be reprieved when they could raise fresh venture capital (case study company managers).

In most cases, the companies paid salaries above union rates in other industries but below those in other centres like London and New York (See Table 4.3 following). Long-term contracts were issued generally to those whose skills were in plentiful supply, while those attracted from other jobs or who possessed scarce skills were made employees. Generally, only core staff was employed while other services, like PC support, couriers and payroll, were sub-contracted to specialists. This sub-contracting of non-core parts of the business was a growing trend amongst all businesses internationally during the 1990s aimed at providing greater flexibility and cost control. But it is particularly prominent amongst interactive media start-ups.

The Irish-based interactive designers in the case study companies like Zartis.com, Nua Internet Consultants and Blue and Green saw themselves at a real disadvantage to their competitors in London, New York and Los Angeles in terms of exposure to interactive media design (interviews with case study company interactive designers). These were design-led Internet companies, where creative influence is important. During the case study period, there was generally only one dedicated annual interactive media exhibition, which was the graduate show of the masters' in

interactive technology from Trinity College, Dublin. While Dublin has an abundance of galleries, few ever featured multimedia work. Arthouse, a state subsidized new media exhibition space in Dublin's Temple Bar, had only a few relevant exhibitions. This was mainly due to lack of funds and Arthouse closed in July 2002 due to lack of funding.

Important too was the physical infrastructure. Most interactive media companies were start-ups seeking low-rent short-lease accommodation convenient to transport hubs, their customer base and amenities to appeal to their, primarily, young staff; mews and basement premises in south Dublin city centre offer such benefits. Moreover, the Baggot Street area already had a cluster of advertising agencies, marketing businesses and corporate headquarters, the key customers of interactive media companies. The existence of these more established companies provided the infrastructure, e.g. high-speed ISDN telephone lines and sub-suppliers of goods and services. Finally, clusters create a dynamic "economic space" for intense transactional relations; the exchange of ideas on creativity, technical knowledge and market intelligence. A critical part of the interactive media industry, often takes place in public houses where those within the industry exchanged technical and market knowledge.

(2) Skills and labour supply

Attracting staff with experience from other sectors of business to their finance, marketing and sales functions was critical for the growth of the case study companies, according to the managers of the larger case study companies. These staff brought great expertise and importantly, credibility to emerging companies in a sector viewed with suspicion by banks and potential customers. State support for the sector also

helped give it credibility. Effective “learning by doing”, experimentation and informal contacts and sharing of knowledge with colleagues in the industry were as important for personnel than any formalised training programme, all the case study company managers agreed. An important attribute for staff was to have both strong technical and creative skills. This was important both for the cost structure of companies and in terms of the quality of products produced. Traditionally in Ireland education concentrated on one or other of the skills, but not both, the case study managers said.

The founder’s skills in almost all the case study companies were mainly in sales and general media management, not in technology. The plentiful supply of computer science graduates in Dublin, due to state education policy, assisted one of these companies in providing experienced staff at relatively cheap international rates, according to interviews with the founders.

Staff from previous company failures in the sector and associated industries also provided key experienced personnel for the case study companies. This was particularly so for the larger companies like Nua Internet Consultants and EMD who needed to recruit fast to fulfil contracts in the mid to late 1990s. The improvement in the availability of skills was helped by the open nature of the Internet. It contained instructions on how to build websites which were freely available. This meant that a cadre of “self taught” Internet production experts was able to develop in Ireland by the mid-1990s. There was also good informal sharing of information and expertise between companies about technical aspects of the Internet, which helped accelerate skills development (interviews with case study companies’ technical directors). In addition, by the mid-1990s, the state funded programmes in interactive media

provided through Trinity College, Dublin, Dublin Institute of Technology, graduate conversion courses to interactive media, Fás, the state training agency, along with several private colleges and enthusiasts, was creating a new skills base specific to interactive media. The relative abundance of skills in editorial, graphic design and finance assisted the case study companies in growing, as labour costs were modest internationally, according to interviews with managers of the companies. But despite this increase in the skills base, by the end of the 1990s, severe shortages of skilled and experienced staff in some areas were emerging. These were interactive media designers, interactive media strategy consultants and digital media programmers. Workers possessing skills such as Java developers, experienced C++ developers, project managers, graphic designers, Visual Basic developers, instructional designers, Oracle database engineers, senior technical sales and senior technical managers were in the shortest supply (see table 4.5 following for technical skill sets required by the case study companies).

There was also a shortage of high-end creative, artistic and editorial skills. Salaries in the late 1990s were increasing in the case study companies by between 10% and 20% annually. Dublin, however, remained less expensive and had a better labour supply than America and London, the main competitor countries during the period of this study (See Table 4.5), according to the case study managers. The shortage of technical people was a constraint to growth for the case study companies. The problems eased considerably with the downturn in the sector from mid-2000. The increasing output of graduates from the courses started in the area to meet demand meant that in some non-technical segments of interactive media, there was an oversupply of some sectors of labour by mid-2000.

Table 4.4: Salary comparison between Ireland, America and England (2000).

Job Title	Ireland	England	America
Annual salary	\$	\$	\$
Project manager/producer	35 - 41	51 - 72	75 – 85
Software engineer/programmer/developer	35 - 44	51 - 65	60 – 75
QA/tester	27 - 33	29 - 35	60 – 70
Technical support/network admin	27 - 33	29 - 35	60 – 70
Webmaster (technical)	30 - 38	32 - 41	70 – 85
Webmaster (content/editorial)	30 - 38	32 - 41	65 – 75
Web author/developer	24 - 33	26 - 35	70 – 85
Multimedia author/developer	24 - 30	26 - 32	70 – 85
Writer/technical writer	27 - 35	29 - 38	65 – 75
Instructional/interactive designer	27 - 27	36 - 51	65 – 75
Graphic designer	27 - 27	29 - 35	75 – 95
Usability specialist	30 - 30	51 - 65	75 – 95
Media specialist (audio/video)	27 - 27	29 - 35	75 – 95
Content co-ordinator	27 - 27	29 - 36	65 – 85
Sales executive *	30 - 30	32 - 39	55 – 70
Marketing executive	30 - 30	32 - 39	80 – 100
General administrator	27 - 27	29 - 38	40 -50
Technical analyst *	95 - 95	101 - 130	90 – 110
CTO/senior technical manager/architect			120 – 160
	82 - 82	87 - 116	
CFO/financial controller/director			120 – 160
	68 - 68	72 - 94	
Sales/business development director *			120 – 160
	68 - 68	72 - 101	
Marketing director	68 - 68	80 - 109	160 – 210
COO/operations/general manager	75 - 75	80 - 109	160 – 210
CEO/Managing director	88 - 88	94 - 116	160 – 210

Salary figures only – not inclusive of other benefits or bonus. Based on staff with three to five years industry experience.

+ indicates opportunity to earn more

* assumes commission extra – stated salary is basic

s indicates, for example, 40s in range 40 - 49

Source: Adapted from New Media CV (2000) December 2000 Salary Survey, Version 3, New Media CV, Dublin.

(3) Financial support and the state investment in interactive media companies

Financing was the most difficult hurdle experienced by the case study companies by a long margin (interviews with case study company directors). The state, via Enterprise

Ireland, played an important role in funding interactive media companies. Most of the case study company founders said that the encouragement from the state, in the form of risk capital and employment grants was a contributory factor in encouraging them to proceed with their companies. Bank borrowing and founder's savings provided the start-up capital for five of the six case study companies. The other, EMD, had international venture capital from the outset. As three of them expanded internationally (Nua Internet Consultants, EMD and SmartForce) then state equity investments and grants, private international equity and a small pool of foreign and Dublin-based high net worth individuals were the source of additional capital.

The state enterprise agency, Enterprise Ireland, was an important strategic investor, principally for expansion in three of the case study companies. Forbairt (the predecessor to Enterprise Ireland) began taking equity stakes of under 10% in companies, as well as grant-aiding them in the mid-1990s. It had previously only been a supplier of grant-aid and support services. Its investment in a company's equity or even by grant-aid was seen as an endorsement of the company and often helped attract other private capital. It filled a missing funding gap.

Significant was the EU-backed seed and venture capital fund that began operations in 1998. In partnership with the EU and Enterprise Ireland, 16 venture capital companies were subsidised to invest seed and early stage finance in indigenous companies. Ten per cent of the 101 companies in which these funds invested were in the broad interactive media content area. A further 16% were in what was broadly the interactive media tools area (Enterprise Ireland, 2001). However, this did not mean that all companies got aid. One case study company, EMD, raising over €2m in 1996,

Table 4.5: The main technical skills required by interactive media companies

Skill	Tools
Programming	Java C++ VB Delphi
Databases	Oracle SQL Server Sybase
Web Authoring	HTML XML Dreamweaver Flash Javascript CGI/Perl DHTML PHP
Multimedia Authoring	Director (with Lingo) Director (without Lingo) Authorware
Operating System	Win '95/98 Win NT / Win2000 Unix (Linux) Mac
Image Manipulation	Photoshop Paint Shop Pro Fireworks
Illustration	Illustrator Freehand
Moving Media	Real Audio and video Premiere After FX

Source: New Media CV (2000).

received it all from individual investors and institutions in London and New York as Irish investors were not interested in trying to invest, due to the then lack of capital.

Of the four generally accepted stages of venture capital funding in the 1990s, only one of the case study companies, SmartForce, managed to get past the third, C stage of raising over €10m. In venture capital, generally the A seed stage is raising up to €2m, B €2m-€10m, C €10-20m and D over €20m or stock market flotation. Raising capital took between three and ten months and was an extremely time consuming and expensive exercise. Specialist accountants, stockbrokers and solicitors had to be engaged for the process. The need to have expertise in Dublin with these skills was particularly important when it came to placing valuations on companies when they were raising funds, according to the managers of the larger case study companies. Due the cost, difficulty and risks involved in raising fresh equity, trade sales became the preferred route of the majority of the case study companies. EMD, SmartForce and Zartis.com, were sold once they reached a certain size. This gave their original investors a return on their capital and provided money to create new companies. But it meant their headquarters leaving Ireland and a diminution in their Irish operations and employment over the longer-term. A fourth case study company, Nua Internet Consultants, got a strategic investment from Eircom, the then state-owned telecom company anxious to explore the interactive media area before its privatisation and flotation.

The supply of venture capital began to improve towards the end of the 1990s, helped by state involvement. A number of new venture capital funds had been established, many as joint ventures between Enterprise Ireland and private sector venture

capitalists. Venture capital invested in the Republic increased by threefold between 1997 and 1999, according to the 2000 annual report by the Irish Venture Capital Association (Irish Venture Capital Association, 2000). A network of intermediaries also formed in Dublin to advise companies, high net worth private investors and venture capital funds. A small number of international venture funds, 3i and Apax Partners, established bases in Ireland as there were perceived to be good opportunities particularly in the information, communications and technology area following several successful flotations and trade sales of indigenous Irish companies.

Enterprise Ireland also played a role in introducing companies to private venture capital. Zartis.com, met the company that eventually bought it at a venture capital showcase in Boston, partly organised by Enterprise Ireland. To secure very large contracts, for instance those close to €1m, the companies generally needed to have substantial financial backing to assure large customers, according to the manager of the larger case study companies. Thus the most successful case study companies reached a stage where to continue to grow, they had to shift their headquarters to England or America and bring in outside shareholders, often from outside Ireland.

SmartForce and EMD floated on stock markets, but not on the Irish stock exchange, which until late the 1990s was unreceptive to technology stocks, according to managers of these companies. The largest case study company, SmartForce, floated in 1995 on America's Nasdaq market, which specialises in technology companies. Over 70% of the company's business was in America and to get larger contracts, over \$1m, customers liked the company to have credibility. Being listed on an American stock market gave it such status. In addition, its original American sales staff had been

given the incentive of share options. The venture capital companies who had funded its expansion were based in America and markets there were more familiar with, and thus gave a higher valuation to, technology companies. A second case study company, EMD, chose to float on London's Ofex exchange, a small market for fast growing companies. It did not even try to attract Irish investors, as the domestic market was too small and unfamiliar with technology stocks.

To address the problem of Irish companies not listing on the Dublin exchange, the Irish Stock Exchange established in 2000 the ITEQ market. To encourage indigenous companies to list, this allowed dual listings with these other markets. It had rules similar to Nasdaq and the German Neuer Markt to reduce paper work and also traded American Deposit Receipts. But this innovative step, done in consultation with the industry, failed to attract any companies as it coincided with the technology slump.

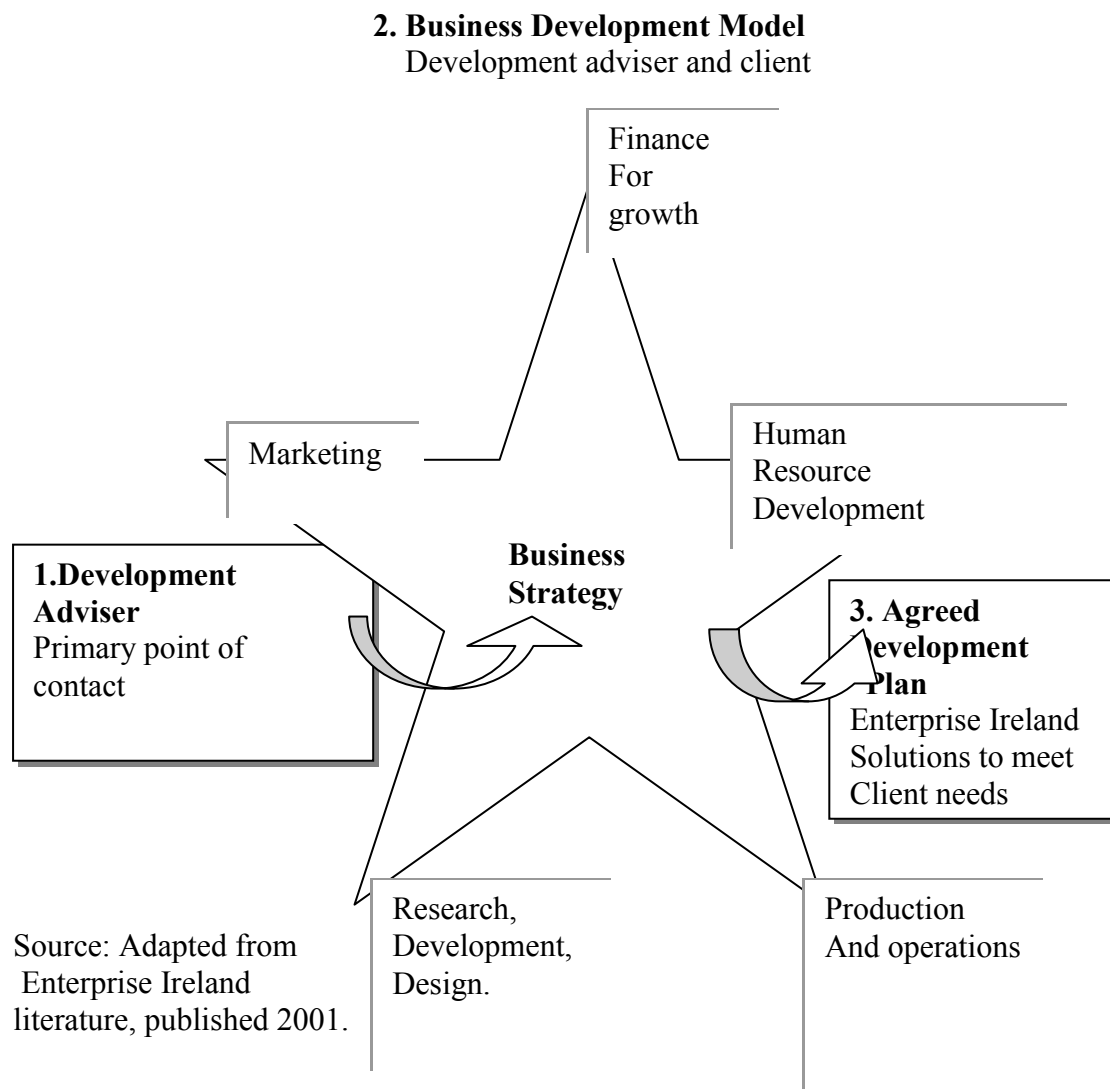
Four of the six case study companies operated share option schemes mostly open to all staff but on different terms. These terms were quite subjective and generally related to the staff member's value to the business. This in itself caused considerable problems with some staff members viewing others as getting preferential treatment (interviews with case study company staff). This level of share option schemes was well above the typical rate for Irish companies and indicated a new culture of equality for the workforces. This was an effective tool in recruiting talent from other industries and retaining existing personnel. They had an important psychological effect too in boosting the morale of staff and making them take ownership of the company.

Most of the managers' argument was that Enterprise Ireland had generic policies for assistance no matter what the business. Thus the grant-aid, equity investment, advice or market intelligence, were dealt with initially in a generic fashion, whether it be a food company or sophisticated interactive media one (See figure 4.3 following for Enterprise Ireland's business development model). This was the "star" shaped strategy adopted in the late 1990s by Enterprise Ireland. It aimed at supporting companies generally with potential for substantial exports to improve their marketing, finance, research and development, production and human resources through an agreed development plan with the agency. But some of the case study company executives interviewed pointed out that this did not take into consideration the more generous specialist support packages being offered in parts of Canada, Malaysia and other centres to interactive media companies with whom they competed for overseas contracts. Several of these companies also completed surveys and/or interviews conducted during the 1990s on future skill needs in the information technology sector. This was done under the auspices of the National Software Directorate. Executives of several companies were interviewed as part of the PricewaterhouseCoopers 1999 report, IST2007 on the interactive media sector, and Farrell Grant Sparks report on it in 1995/1996, giving them indirect input into policy. In fact many executives of the case study companies claimed that there was far too much surveying but little action.

(4) Demand conditions

Indigenous and foreign-owned software companies were the first customers of the larger indigenous interactive media companies, according to the case study founders. They were a sophisticated customer base. The high demands of serving these

Figure 4.3: Enterprise Ireland's business development model, 2001.



customers helped the indigenous interactive media companies develop their expertise to international level, the case study founders said.

The e-learning companies, SmartForce and FGlobel, targeted the British market from the outset, as Ireland was too small. Breaking into the American market was seen as critical but was also difficult and expensive for all the case study companies. It was the world's largest market for interactive media content but marketing budgets and time commitment to penetrate it were very high. The American market posed fewer

practical difficulties than entering several smaller European markets, each with their own language, cultural and regulatory differences. But American customers had a “not invented here” syndrome which meant that to penetrate it was difficult the case study company managers said. The case study companies, thus, had to take on an American identity and establish significant operations there putting key executives there full-time and recruit American sales staff.

Irish companies expanding overseas had in the past generally used local agents or distributors. For various reasons, this approach did not suit the interactive media companies. They were selling very complex products and/or services and generally the customers wanted to talk direct to the vendor, explained the manager of one of the case study companies.

The Irish government and its myriad of agencies, public bodies and state-owned companies, is easily the country’s biggest purchaser of goods and services. The government spent an average €20bn annually during the period of this study. However, none of the case study companies had until the late 1990s significant government contracts. Many had contracts with overseas government agencies before even having been granted an audience by similar agencies in Ireland. One, SmartForce, for example, had a contract with the American Defense Department. The reasons for the lack of government contracts are complex. Firstly, until the late 1990s, many Irish government departments and bodies had a conservative view on interactive media. They were unwilling to invest public money in products or services unless the return could be justified, according to managers of the case study companies. It is significant that a major customer of Nua Internet Consultants was

Fianna Fáil, the political party that made up the government, but not the government itself.

Another possible factor was a lack of motivation on behalf of state departments to purchase interactive media products or services even if there may be long-term savings. Significantly, some of the more market-led state owned companies, like for instance the National Lottery, was an early purchaser of web services from Nua Internet Consultants. The Department of Social Welfare, the Republic's second biggest spending department, did commission interactive media kiosks in 1997 for several of its centres. The difficulty was, however, that those using social welfare centres were generally unexposed to computers so such kiosks had little usage. On the other hand, the Irish Revenue Commissioners, the body responsible for tax and customs, had developed by 2001 one of the most sophisticated online sites in Europe. By the late 1990s, government agencies had begun to use interactive media in training within, for example, Dublin City Council and some health boards. Separately, as part of the recommendations of the Information Society Commission (1996), the government aimed to have all its services, insofar as possible, online by summer 2001. The project encountered a number of delays but eventually did deliver. In November 2001, Ireland was ranked by a European Commission survey (EU Commission, 2001) as first out of all EU and European Free Trade Agreement countries, 17 in total, for online government.

The case study companies themselves did not aggressively market to government agencies. If a state agency did decide to proceed with buying interactive media products or services, it generally went to tender, which could take long periods to

organise and decide. This meant that competitors would have an equal chance of securing a contract on which one's sales representative had spent time and expense getting in the first instance. Successful tenders, even for relatively small contracts, required tax clearance certificates, guarantees on financial stability and other documentation that took time and expense to gather, according to the case study companies.

(5) The state's influence on the amount and type of research undertaken

State policy also had a significant influence on indigenous interactive media company's research and development activities, according to the case study companies. Research and development was one of the most critical parts of the operations of interactive media companies that were product based. Spending on it had to keep increasing in order to remain internationally competitive, according to a manager of one of the largest case study companies. The tax treatment and grant-aid available for research and development had a bearing on what work was conducted. Most of the case study companies had availed, to various extents, of grant-aid from Enterprise Ireland. The fact that these subsidies were available made them more likely to conduct it and try to develop products.

The most financially successful case study company, SmartForce, was spending \$42m, 25% of its sales, on research and development by 2000, viewing it as essential to remain competitive, according to company accounts published at the time. It was producing a new product, or version or product update, almost each working day. However, there was little of this research in interactive media or related areas originating in Irish colleges or research centres, according to the case study company

manager. The case study companies did not believe that research coming from colleges would be of great practical benefit to them, but were interested in looking at options.

(6) Role of related and supporting industries

The role of related and supporting industries was important in the development of the indigenous interactive media sector. The growing number of e-learning companies benefited from the internationally competitive and sophisticated base of localisation companies, both indigenous and foreign owned, which had established in Ireland to service the software industry. Localisation is a complex part of product development, involving engineering, language, technical and cultural changes to products, marketing materials, technical and customer service. These all have to be tested for quality. Content products are generally more difficult to localise than regular software. Only one case study company, SmartForce, had significant localisation of its products, localising into seven languages by 2000. In terms of other supports, specialist recruitment companies for technical skills had established particularly in Dublin to service largely the software industry. A specialist one in interactive media was also established in 1998, New Media CV. It was of particular benefit as the company's founder was particularly knowledgeable about the requirements for interactive media companies.

Dublin-based IT recruitment specialists were particularly good at attracting back skilled Irish people who had earlier emigrated and get them to work in some case study companies. Investment bankers, accountancy firms, consultants, stockbrokers and legal firms slowly in the mid-1990s began to develop specialist knowledge in the

software industry. Several became particularly specialist in advising interactive media companies. Many of these had national networks and international alliances with larger companies overseas. This was critical in raising funding locally for the case study companies and then internationally. The role of investment bankers and stockbrokers as knowledgeable intermediaries was important in providing credibility with potential investors and customers for the case study companies, according the managers of two of the larger case study companies. Specialised and sophisticated information technology consultants were also important for product testing and building networks.

Increasing competition in the telecommunications market and expansion of broadband capacity and hosting in the late 1990s and early 2000s also assisted the case study companies, the founders said. Another problem the web-service companies faced was the difficulty in localising content even from one English speaking country to another (see Kerr, 1999 for further evidence of this). This work is often better done by people native to the country where the web service is aimed.

Enterprise Ireland, through its 32 overseas offices, assisted two of the six case study companies in researching new markets. It provided partner search, research and funds for Target Marketing Campaigns (TMC) for entry into specific markets. International marketing was generally a weakness of most of the case study companies.

(7) Relationship between Government and companies

The case study companies had varying relationships with the state's policymaking bodies. The most senior executives of two of the six case study companies, Nua Internet Consultants and SmartForce, served on government appointed committees

charged with making policy recommendations on the information society for part of the period under the study. This made policy recommendations relating to education, infrastructure, and adoption of e-Government and was supportive of the construction of The Digital Hub, Media Lab Europe and National Digital Park projects. Their involvement on these committees gave them, and thus the industry, a direct input into initiatives in the area.

Bodies like the Information Society Commission, Digital Hub and others, also invited submission from the public; however, none of the companies took up this offer. They cited time constraints, possible conflict of interest and unwillingness to have their companies become embroiled in public debate as reasons. They saw it as the role of their professional bodies like the Irish Internet Association and Irish Software Association to do this lobbying on their behalf (only two of the six case study companies were members of these). Those who were not actually members still saw these bodies as their lobby group.

Indigenous interactive media companies who sought state assistance could approach a number of different state agencies. These included Forbairt, An Bord Táchtála (The Trade Board), County Enterprise Boards, (state funded organisation in each county that could assist companies employing less than 10 people), Údarás na Gaeltachta and Shannon Development. The latter two were regional enterprise development agencies for the Irish language speaking area of the country and for the area around the River Shannon. Research conducted by Farrell Grant Sparks (1998, p. 58) indicated that while developing indigenous companies did receive state support – a third got grant-aid – they had many criticisms of the state support system. These included a lack of

funds to help them develop globally and a lack of understanding of the industry among state support bodies. There was criticism from the companies too about the lack of co-operation between state enterprise agencies supposed to be assisting them and the cost of applying for state assistance as against the actual benefit, due to the bureaucracy (Farrell Grant Sparks, 1998, p. 58).

The actual impact of state support in terms of company and employment development in the interactive media sector has not been researched. However, a 1999 study of the impact across all sectors of the state support system for micro-enterprises by the Industry Evaluation Unit (Enterprise, Trade and Employment, 1999, p. 5) found disappointing results. The report stated: –Generally, the reported impacts of state support are disappointing. At best, 50% of companies reported significant impacts on a range of key indicators as a perceived outcome of state support” (Enterprise, Trade and Employment, 1999, p. 5).

This report criticised the low level of specialist support provided by the agencies to companies in the R&D and exports area, a key component of companies involved with interactive media. The report recommended that in future, financial support from the state should only go to companies with high growth potential. It highlighted the importance also of sector selectivity and export profile as criteria for state financial assistance. In response to these and other criticisms, Enterprise Ireland, formed in 1999 through an amalgamation of Forbairt, An Bord Tráchtála and the in-company training division of Fás, announced a new approach to assisting industry. Enterprise Ireland restructured its operations to provide a one-stop-shop of expert services to indigenous companies, with particular focus on high-potential start-up companies. It

planned to re-balance its spending patterns, increasing the proportion spent on research and development, marketing and human resources. It would use less on straightforward job creation (Enterprise Ireland, 1999). Its aim was to create profitable new businesses, building Irish firms' share of international markets, harnessing new technologies, deepening R&D capability and building staff skills. Its focus would be on solutions and service rather than programmes or products (Enterprise Ireland, 1999).

Enterprise Ireland's most successful way to solicit the input of companies into policymaking was in the Annual Business Survey. However, only 52% of companies generally replied and they were usually the smaller ones. This survey asked for opinions on broad problems being experienced by companies like skills, infrastructure and marketing. An interesting feature was that while many executives of the case study companies had strong views on how interactive media policy could be improved, particularly within the state enterprise agencies, few would express it publicly. Their fear was that their comments would get back to the agencies and could jeopardise their relationship with them and/or their professional relationships with personnel within them.

Two executives had spoken publicly at industry conferences about changes needed in policy, but had been circumspect in their comments. Two company executives had also spoken directly to politicians within government on an informal basis about policy changes required. In summary, the executives generally viewed the return as too long-term, time expensive and posing too much risks in lobbying for changes to state policy. Most were ~~too~~ "too busy" running their own businesses to even contemplate

lobbying. Their businesses would also be better served short-term by them trying to develop them rather than long-term trying to influence state policy. Another significant factor was that since much of their business was overseas which demanded constant travelling, they were not always available in Ireland to attend meetings or conferences where they could, perhaps, have an input into policy. They would only contribute to state policy formation if they were pro-actively pursued to do so, like being sent a survey or doing a market research interview. But even here, they would be circumspect on their comments; much of this research work was commissioned by the state agencies upon which they relied for support but where most of their criticism would be directed.

The case study companies' relationship with the state enterprise agencies was also examined to see how this fed into policy formation. Enterprise Ireland was the main state agency charged with developing indigenous industry during the period of the study. Its main supports for companies were: equity, grant-aid, research and development support, human resources support, market research and mentoring. Enterprise Ireland had set criteria for how it can handle each company and had generally a generic support structure. There have been, however, specialist programmes for the audiovisual and software industry. The level of grant-aid it can give any company is dictated by European Union rules and Department of Enterprise and Employment regulations and dependent on the relative economic status of the part of the Republic of Ireland where the company is located. For instance Dublin received the lowest aid, while the border and midlands regions received the highest. Once grant-aid is awarded to a company there are normally quarterly reports on how the drawing-down is proceeding. However, this is not always adhered to, as many

companies forget to make this return (interviews with case study company managers). Each contact between the company and the enterprise agency is supposed to be, but was not always, logged on a centralized internal Enterprise Ireland global database (interviews with case study company managers). Many of the following paragraphs are based on analysis of this database to assess the exchange between the companies and agency.

The surprising element was how much it was a two-way relationship between Enterprise Ireland and the companies. Enterprise Ireland, as well as trying to develop the case study companies to create jobs, had other agendas. These were political directions passed down to it via government. In its relationship with the companies it was also trying to implement these agendas. It was trying to get client companies to assist in achieving directions it was getting from central government. For example, it tried to persuade Nua Internet Consultants to expand its operations from Dublin by putting jobs into Sligo. It offered a special aid package for it to do this. Enterprise Ireland was trying to meet government regional job targets. However, at this time Nua Internet Consultants was then barely able to manage its operations in one location. This was acknowledged by the enterprise agency. So such a suggestion was not necessarily in the best interests of Nua Internet Consultants, but rather to meet central Government regional job targets.

The analysis of the internal records over the time frame also showed how Enterprise Ireland was “learning by doing” as it was trying to assist the case study companies. This was hindered in some ways, particularly the agency’s own internal structures. For example, a case study company might have to deal with several different officials

within Enterprise Ireland depending on which of the myriad of programmes it was seeking to apply for. For instance, one case study company had four of its executives dealing with 11 different Enterprise Ireland executives during a three-year period. It took the company over a year to progress an application for a €634,000 grant for a €3m American marketing plan which never fully materialized.

Another criticism was the lack of specialist knowledge within the enterprise agency. For example, none of the six case study companies dealt with the same officials, despite the fact that they were effectively dealing with companies of a very similar nature but not in direct competition. This arguably limited the agency's role in specialist knowledge diffusion between client companies and in its internal learning process about emerging industries. On the other hand, Enterprise Ireland records show quite a rigorous approach to grant awarding to companies. In the instance of one of the start-ups studied, Zartis.com, it assigned an experienced mentor to the company, which saw its management as being inexperienced.

Enterprise Ireland provided Nua Internet Consultants with €7,000 for a feasibility study. It identified many weaknesses in Nua's structures, systems, focus and management and sought their rectification before the grant-aid was provided. Many of these problems, however, were never rectified but the grant-aid was still paid. It also tried to encourage its client companies to move-up the value chain in terms of the sophistication of its products. It did this by encouraging them to apply for research and development grant aid for product development. Enterprise Ireland also linked most grant-aid to the case study companies with requirements to expand their main operations outside of Ireland. This also applied to companies in the start-up phase.

Having to seek most of its business outside Ireland also put considerable strain on Nua. It added to its costs and meant senior management were abroad chasing contracts much of the time, often causing a lack of management attention on operations at home (interviews with managers of case study companies). The nature of Enterprise Ireland's grant-aid structure encouraged the companies to take on permanent rather than sub-contract or temporary staff. This was because the enterprise agency was then assessed on how many permanent jobs it created. Once the downturn came in 2000, some of the companies were left with an extremely high fixed cost base that was not easy to reduce quickly (interviews with managers of case study companies).

The informal role of Enterprise Ireland was important too. Expediting visas for important visitors to companies in Ireland and sales leads from its international network of offices were mentioned by some executives of case study companies. Even for SmartForce, an internationally established case study company, Enterprise Ireland was able to provide a valuable study on its entry into the Spanish and Portuguese markets and conduct partner searches. This reduced the time to a new market for the company. Enterprise Ireland was also pro-active in trying to get the case study companies to look at new geographical markets by organizing workshops on them. But moving outside English speaking markets was particularly difficult for interactive media as discussed earlier in this chapter.

The Enterprise Ireland records indicate that once a company reaches a certain size with a track record of achievement, it actually becomes easier for it to attract more grant-aid. Effectively, it becomes a lower risk and potentially higher return

investment for the agency. For instance, SmartForce, the largest and most successful case study company, also got the biggest amount of grant aid. In 1999, this case study company got over €1m in training grants despite its strong profit record. The agency helped grant-aid its transformation from a CD-ROM to Internet based platform. Once SmartForce began to expand, many of the jobs it created in Dublin were not in interactive media but in telephone and online sales operations. The grant-aid, coupled with advantageous tax regulations, patent schemes and availability of the requisite skills, secured its research and development centre for Dublin employing 600 highly skilled people (interview with company manager).

The success of SmartForce helped educate Enterprise Ireland about the possibilities of similar types of companies supplying other international market segments. In 2000 the agency began to pro-actively encourage companies to enter the e-learning market based on SmartForce's success. It also played a significant psychological role as a model for other indigenous companies in the sector. This was in terms of international publicity for the technical capabilities of Ireland in the interactive media sector (interview with company manager).

The case study company founders had differing views on what should be the role of Enterprise Ireland and its effectiveness. They agreed in general that the services provided by the agency, particularly in market research, industry contact and trade show support, were important. The most important area for their growth, they argued, was the supply of seed funding from the state agency. In this area they thought it was weak (interviews with case study company managers). They thought another critical role of the agency was in marketing support for entry into non-American markets. But

they thought this was also a weakness. In contrast, its assistance to marketing in America was seen as good (interviews with case study company managers). Some of the case study company executives argued that funding should be left to the private sector and that the government should not distort the market. They spoke from experience where they saw little logic or consistency in the agency's funding policies to rival companies, their own or others.

After explosive growth between 1997 and 2000, the indigenous interactive media industry went into an equally sharp decline with several showpiece indigenous interactive media companies, like Nua, Oniva, Rondonondo and Ebeon, disappearing almost as quickly as they appeared. The business model that many were operating – growing market share on the back of venture capital – proved unsustainable when demand for digital media products failed to meet the ambitious projections and the financiers withdrew their support. But this rapid decline of 2001 left a skill base much of which consolidated into the interactive media companies that were pursuing more viable business models based on international markets.

Only two of the six case study companies, SmartForce and FGlobal were still trading by 2001, while a third was trading but had moved to London. By 2004, only two of them were still operational. These survivors were all product centred, in specialised markets. Significantly, they had developed early in international terms in specialised global niches, constantly updated their technology, adopted their products to customer trends and developed strong partnerships. They did not focus on technology per se, or shift their product to each new technology trend. Instead, they viewed themselves as

~~providers~~ of technical training” or ~~providers~~ of market” information, with the technical means of how they did it coming secondary.

After this period of rapid consolidation in the early 2000s, the sector began to grow again but at a more modest pace. By 2004, it was larger than it had been before the so-called dotcom crash. This was mainly due to the growth of the Internet fuelled by its increased penetration in both households and businesses. The number of indigenous companies which had grown to over 25 staff, had doubled by 2005. However, employment in indigenous interactive media companies in Dublin did not mirror this increase. It only increased by 22% to 1,813 (see Table 4.1 shown previous). The figure was distorted due to the layoff of almost half the Irish staff at the largest indigenous company, CBT Systems, during the period. This followed its takeover by an American rival Skillsoft.

The state’s increasing influence on the indigenous sector was evident by the formation of a new ~~state engineered~~” cluster in purpose-built accommodation in the Digital Hub in the Liberties area of south inner city Dublin. By September 2005, the Digital Hub was the location of 50 companies, employing 450 people. By 2010 it had increased this to 87 companies. These were pre-dominantly indigenous ones ranging in size, but also included some of the foreign digital media companies attracted to Dublin. IDA Ireland, charged with attracting TNCs to Ireland, had begun in the mid-1990s to focus on attracting leaders in the interactive media industry to Ireland. For example, Amazon.com, the American online retailer established a European base in Dublin’s Digital Hub in 2005. Two other global leaders in interactive media – e-Bay and Google – also established significant European operations in Dublin by 2004. This saw foreign interactive media companies take over from indigenous ones in

terms of having the largest employment in the capital. They accounted for 52% of the estimated 3,800 interactive media employees.

Conclusion

This chapter charted the development of Ireland's indigenous interactive media industry from its embryonic days. It showed how the industry developed in different spurts between the early 1990s and mid-2000s. Its development had many similarities to the nascent development of the indigenous software sector as outlined in previous studies such as that by Ó Riain (1999). From many companies that were founded, the failure rate was high and only a few became internationally competitive. The few that did all concentrated on a global niche, mainly e-Learning. They had been product orientated, sales driven and export oriented from their inception, principally towards America and the corporate or public sector market, rather than consumers. They invested heavily and continuously in research and development. They were assisted by the state in terms of capital as well as by "smart individual investors" and venture capital. They built strategic alliances with other global players in their niches. They benefited from "first-mover" advantage within their markets. The most successful companies tended to be spin-offs from CBT Systems. They could thus benefit from marketing, technical and sales knowledge, albeit in slightly different markets. They all tended to cluster in the greater south Dublin area within an eight-mile radius of each other. This was helped by the availability of key technical and sales staff within this area. They also benefited from air links to their principal markets in London and America. Their success was built on securing at an early stage of their development key contracts from internationally recognised clients. This became an international endorsement for their products.

The least successful companies tended to concentrate on providing multimedia services to the highly competitive domestic market. While they had some export success, they were unable to build upon this. They also tended to be technology driven, as opposed to customer focussed. They were undercapitalised from the outset and thus had little opportunity to build products. Attempts by Irish companies to establish in fast-growing interactive media sectors like the games industry, while showing some initial success, proved short-lived in the 1990s. Global competition and barriers to entry were too strong for the nascent Irish sector. The indigenous interactive media industry, although originally treated as part of the software sector, had significantly different characteristics. It did, however, benefit from the technical expertise, training, sales and marketing knowledge and infrastructure of the existing indigenous software industry. It is not co-incidental that it flourished in south Dublin, the same geographical area that both the indigenous and trans-national software sectors were already internationally competitive. As will be analysed in the next chapters, 5 and 6, the state played an important role in the interactive media sector's development, albeit originally in an attempt to develop the software sector.

Chapter 5

Analysis of the Agenda Setting Stage of Policymaking for the Indigenous Interactive Media Industry

Introduction

The Irish government had a sporadic relationship with interactive media between 1994 and 2004. Much of the policymaking towards the sector was ad hoc and disjointed. But the government's selection in 2000 of interactive media as one of four indigenous sectors to strategically develop for international growth saw a more systematic policymaking process instituted for it. This chapter analyses the data relating to the evolution of this policymaking process from the point of view of agenda setting.

This chapter and the next, Chapter 6, answer the first question posed for this study in Chapter 1. What was the policy formulation process used by the Irish state between 1994 and 2004 aimed at developing the indigenous interactive media sector? Analysing the data relating to a range of substantive processes which Irish state enterprise agencies and government departments developed over the period of the study to make policies for the indigenous interactive sector does this. It starts with the identification by the state of a new sub-sector of software – multimedia - in the mid-1990s. It follows through the process to 2000 when interactive media, as it had then become known, was designated as one of four key indigenous sectors for tailored state support. The aim was to grow its exports substantially and provide high paying jobs. To give structure to this and the next chapter, the case study is broken down using the Stages (Brewer and deLeon, 1983) description of the policymaking process as outlined in chapter 2. These are principally 1) Agenda setting; 2) policy formation and

legitimisation; 3) Implementation and 4) Evaluation. This chapter deals with 1) Agenda setting and the next chapter with the latter three stages.

Early agenda setting

This first section of the chapter analyses the first stage of the public policymaking process – agenda setting – in relation to the case of the indigenous interactive media industry during 1994 to 1996. The trigger for the Irish state's first direct intervention into the interactive media market was a result of its EU funded programmes designed to develop the indigenous software sector. The state had since 1977 been trying to develop the software sector with relative success compared to other countries. This intervention was a confluence of three factors – bureaucrats specialised in software using their market knowledge to identify new technological trends, academics experimenting in the area and the availability of EU funding aimed at fostering R&D in indigenous industry. Thus the trigger for state involvement in interactive media was a mix of internal and external forces, but principally the availability of EU funds.

The National Software Directorate (NSD) was the Republic's first state agency to target the interactive sector for development, albeit in the belief that it was a part of the software sector. The National Software Directorate was established under a software support measure that was part of the sub-programme for Small Business under the Irish Industry Programme of the EU's Community Support Framework. It was a unique agency in Europe, set-up at the instigation of the Irish software industry and established as a focal point for the software industry. Since 1985 the Irish state had targeted the software sector for development.

The National Software Directorate was originally under the control of a government department, the Department of Enterprise and Employment and also the Republic of Ireland's job creation agency, the Industrial Development Authority (IDA). In 1994 it came under the control of Forbairt, when IDA was split into two separate agencies, with Forbairt mandated to develop indigenous industry. Some 74% of the NSD's €4.6m (IR£3.698m) budget for 1991-1999 was recoverable from EU funds. Amongst its functions was to advise state agencies on a strategy for the software sector and distribute grant-aid (Government Publications 1991).

The directorate in 1991, after advertising for submission for research projects under a scheme entitled the Software Programme for Advanced Technology (Software PAT), approved three research projects. The one that received most funding was Multimedia Technologies Ireland Ltd (MTI) (Clarke 1995, p. 121). It began operations in February 1992 and was based in University of Limerick. It was a merger of two separate proposals from Trinity College, Dublin and one from University of Limerick. The academics in these institutions had proposed the project based on their knowledge of developments in the multimedia area, particularly in America, and some had links with the MIT Media Lab, Boston. Thus the intelligence to trigger this investment was not coming from the state, but instead, academics. The proposals were also coming from external policy entrepreneurs.

MTI's early days involved a lot of "learning by doing" for the state's policymakers. MTI's first two years, between 1992 and 1994, of evangelising to software companies about the benefits of going into multimedia were, in retrospect, aimed at the wrong market, according to Seamus Gallen (Appendix G). So MTI switched its target

market from software development companies to companies that specialised in content development, particularly ones involved in text-based training companies. These consisted of about a dozen small companies largely in the Dublin area that had begun to emerge in the early 1980s. CBT Systems (re-named Softskill) and Interactive Courseware were the initial companies in this area and they spun-off Financial Courseware and Mindware in 1988 (this was acquired in 1996 by Gartner Group).

The state had largely ignored a previous recommendation to assist in the development of this small cluster of computer-based training companies. The sector was weak financially and in terms of lobbying. The Computer Education Society of Ireland, a voluntary body of academics, was in the early 1980s encouraging the introduction of more computers in education. This led in 1986 to a committee brought together by the Department of Industry and Commerce (later renamed Department of Enterprise, Trade and Employment) producing a report on the courseware industry. Ó Riain (1999, p. 154) describes reaction to this report as quite critical and there is little evidence of implementation of its recommendations.

MTI's other remit was to bring the industry together as a special interest group, to provide support for companies and advice for policymakers (Galen 2000). There is little evidence of its role in influencing policymaking. In January 1994 at MTI's instigation, the Irish Interactive Multimedia Association (IIMA) was formed. This was autonomous from MTI, apart from it having one committee member, and consisted of about 50 companies and academics interested in the multimedia area. Its first chairman was Liam Fitzgerald, then managing director of Financial Courseware,

one of the most successful indigenous computer based training companies. Most of the seminars, workshops and industry co-ordination role switched from MTI to IIMA from about 1994 onwards, according to the then IIMA organiser Charlie Pritchard in an interview with the author in 2000 (Appendix G). Apart from a €8,894 (IR£7,000) donation from MTI to IIMA to produce an online directory for the multimedia industry, it provided no other direct financial assistance to the association. The IIMA was funded from small subscriptions from members and used facilities and equipment provided free by Dublin Institute of Technology and Trinity College, Dublin. It was refused subsidies from the state and did not have the financial resources to engage in lobbying on standards or other matters to government, according to C Pritchard (Appendix G). Thus the nascent sector was left without an effective lobby to place the development of the industry on the political agenda. By 1999, the IIMA had ceased to function, with its role largely taken over by the Irish Internet Association (IIA), which had a full-time secretariat and a wider remit.

But despite some minor successes that MTI had, its conflicting mandate to become commercial, assist the industry and on an operational level work between two campuses proved too heavy a burden. In retrospect, the state imposed quasi-commercial, quasi-industry support role failed. The decision to locate the centre in Limerick proved wrong, the National Software Directorate's executive Seamus Gallen said in an interview in 2000 (Appendix G). Gallen said: "The downside was that they [Multimedia Technologies Ireland] were not physically central to their constituency. Had they been in Dublin other things would have happened. They would have had a better chance of survival as well."

Although no formal decision was made, the National Software Directorate, which was engaged in the multimedia industry through MTI, was disengaging from active involvement in sector. Gallen said: (Appendix G):

There was no clear decision to spin-off [multimedia from the NSD], perhaps an unclear decision. The whole focus was to get it [Multimedia Technologies Ireland] commercial and out of the PAT programme. We ceased trying to do anything for the industry, we were just trying to salvage something – so that Multimedia Technologies Ireland would survive. So if any other part of the organisation [Forbairt] wanted to run multimedia that was fine. Nobody else really wanted it. There was no internal debate.

By 1999, when MTI (which had been re-named Into White in 1997) ceased trading, it had consumed €3.8m (IR£3m) or 50% of the Software PAT budget according to Gallen (Appendix G). While the state's early foray into the multimedia industry would seem a costly mistake with little tangible return, it did help “prime the pump” for the industry.

There is some evidence of spin-offs from the state's early involvement. Clarke (1995, p. 36) pointed to the role MTI had played as a model for the Ireland's inward investment agencies, IDA Ireland and Shannon Development, in trying to attract multimedia companies into Ireland. It also achieved some of its aims in helping foster interactive media skills development. This expertise led to the development of several other companies and perhaps more importantly MA courses in the area (in Trinity College and University of Limerick). The costly experience with MTI, however, led bureaucrats in the state enterprise agency to curtail their role in the interactive media sector for several years. When the National Software Directorate ceased trying to promote the multimedia industry in 1995, the responsibility for the sector was not given to any other section of the state enterprise promotion agencies. Thus there then

followed a period where there was no systematic intelligence gathering to feed into internal agenda setting for the interactive media sector.

Putting interactive media back on agenda

The trigger for putting back interactive media on the agenda came from an external policy entrepreneur. The principal of the Senior College Ballyfermot, west Dublin, a further education college running courses in media related areas, approached the state enterprise agencies in 1996 about the agencies part-funding a report on the multimedia sector, which would act as a blueprint for the development of the sector. One of those working for the college on the project was a former member of staff of Multimedia Technologies Ireland. Under an EU funded Small Business Operation Programme and ADAPT Human Resource Community Initiative, around €19,059 was raised by the National Software Directorate (through its parent Forbairt) in addition to funding from IDA Ireland, the state inward investment agency which was showing renewed interest in multimedia as a source of overseas investment, according to Gallen (Appendix G). A steering committee to oversee the study was made-up of IDA Ireland, Senior College Ballyfermot and IDA Ireland. In January 1997, it commissioned Farrell Grant Sparks, a medium sized Dublin business consultancy and Gartner Group, a London technology research company, to conduct the study. It gathered extensive statistics on the sector, interviewed key companies, experts and state officials. Its 90-page report went through several drafts at the steering committee stage. It was, according to members of the sub-committee, left on a shelf for almost a year.

The eventual report, *The Irish Multimedia Industry, A Current Profile And Future Development Strategy* (Farrell Grant Sparks, 1998, p. 1) was not published until November 1998, almost two years from the time it was first commissioned. Only a brief version was made available to the public, while the in-depth report had a closed circulation to the agencies as it contained information that could be of benefit to other countries competing against Ireland in trying to attract overseas multimedia investment. It did, however, represent the first in-depth analysis of the existing Irish multimedia sector, its strengths and weaknesses and analysis of the global multimedia industry.

The report set out a strategy to develop the indigenous sector and formulate measures to ensure Ireland was attractive to overseas multimedia companies. It found that Ireland had extremely high potential to develop companies in the interactive sector in content development, particularly non-games, web-based services and hardware manufacture (Farrell Grant Sparks, 1998, pi). The industry employed 2,200 people and was forecast to grow to 4,000 by 2000 but could grow to 9,000 if the correct actions were taken by the state (Farrell Grant Sparks, 1998, introduction). It found that the indigenous interactive media sector was involved in non-games content development like reference guides and computer based training and service provision like localisation, web-design and consulting. Most companies participated in several of these activities. Significantly they were very small with only a quarter having more than 21 employees in 1997. They were, however, growing and 75% of companies were exporting by 1996 compared to 42% three years previously. Investment in research and development and marketing was also increasing (Farrell Grant Sparks 1998, introduction.). It found that half the existing indigenous interactive media

companies evolved from campus companies (Farrell Grant Sparks 1998, p. ii). The report warned that other centres around the world like New York, London, Malaysia and Israel were developing interactive media centres at a fast rate and Ireland's competitive advantage in the sector was being eroded. Farrell Grant Sparks (1998, p. i) summarised the overall weaknesses in the Irish digital media sector as follows in the Farrell Grant Sparks 1998 report : –The overall industry in Ireland is young and fragmented and needs a structured and coherent approach to its development. In particular, it lacks an effective forum to inform policy decision makers nationally of issues of relevance to the industry". To address these identified weaknesses, it made recommendations on accommodation provision, access to capital, telecommunications, training, marketing, industry co-ordination and liaison with the state (Farrell Grant Sparks, 1998, p. ii). It found that there was little monitoring of employment structures and skills needs to inform policy makers and educational bodies.

One of the few initial responses to the Farrell Grant Sparks (1998) report was that it made Forbairt (later re-named Enterprise Ireland in 1999) designate a section and officials to take responsibility for the interactive media industry. In 1998, a sector was established in the international services division of Forbairt, a section that also dealt with the audio-visual industry and software investments. Forbairt called an informal meeting of industry representatives. The outcome of this meeting was to commission an update of the 1998 Farrell Grant Sparks report on the interactive media industry, as by this stage it was out of date, before any concrete action could even be taken on it. The six-page update, *Multimedia Ireland: Realizing the Potential* (Farrell Grant Sparks/Enterprise Ireland 1999, p. 1) found there had been significant progress since

1997 in the understanding and support of the interactive media industry. There had been significant growth in Ireland amongst Internet services, Internet consultancy and educational content markets but little in other areas of interactive media product development. It pointed to improvements over the previous two years in two key areas for developing the sector - educational provision for the interactive media industry and the cost and capacity of the telecommunications infrastructure. But it found that no progress had been made on the report's other recommendations with regard to having a representative presence for the interactive media sector to interface with policy and decision makers relating to the sector's continued development (Farrell Grant Sparks/Enterprise Ireland 1999. p. 2).

The impact of the original Farrell Grant Sparks 1998 report on policymaking was small. It was coming into the policymaking system at a low decision-making level and had too few actors within the political stage willing to promote it. Without this support, it never achieved agenda status. There was no specified implementation structure for its recommendations and any incorporation of them into state policy seem to be haphazard or co-incidental. It was a useful reference document but did not form any blueprint for the sector's development (Clarke, 2000).

National Software Director's agenda setting

The National Software Directorate triggered two further important policy developments that assisted the interactive media sector, albeit that its main aim was to assist the software sector. This was proactive input into policymaking from the bottom-up. Under its mandate the National Software Directorate was responsible in ensuring adequate supply of information technology graduates, a key component for

interactive media companies. Through its close contacts with industry, the National Software Directorate noticed in the early 1990s an impending shortage of IT professionals. It instigated the commissioning of a report in 1991, *IT Manpower in Ireland 1991-1995* from Sociometrics, a small Dublin consultancy company. The Higher Education Authority, a co-ordinator of the tertiary level educational institutes, the Department of Enterprise, Trade and Employment, IDA Ireland and the Irish Computer Software Association, funded the report. The main findings of the unpublished report were that there would be a gap of 208 computer science graduates by 1995 (Sociometrics, 1991). It also forecast a shortfall by 1995, estimated at 305, for sub-degree electronics graduates at technician and test level. Colleges responded informally and rapidly to the report by increasing the number of places on computer science courses, adding courses and converting diploma courses into degree ones.

By 1995 the graduate shortfall in interactive media was occurring again. The National Software Directorate, through its surveying of software companies and informal contacts, found that demand was once again beginning to outstrip supply for IT graduates. It commissioned another report from Sociometrics that recommended a doubling of degree and diploma places on IT courses. How this trigger for policymaking was transferred into action is discussed in the next section (Policy formulation and legitimisation). This rapid increase in IT graduates benefited the interactive media sector.

Thus, until the mid-1990s, there was a bottom-up and proactive approach to agenda setting for policymaking in the nascent interactive media sector. A small indigenous advocacy coalition on behalf of developing the interactive media sector had

established itself. It comprised industry leaders, those in academia interested in the sector and some officials in the National Software Directorate. This advocacy coalition had to convince more senior management in the enterprise agencies as to the cost-benefit of financially supporting the sector's development. The policymaking mechanism within the more senior ranks of IDA, (later part of it was re-named Forbairt and then Enterprise Ireland), was based on a rational managerial risk assessment and cost benefit analysis. The measurement of success of the IDA was on sustainable jobs created. With Ireland's high unemployment at the beginning of the 1990s, large volumes of jobs rather than strategic long-term investment in high-risk growth sectors were the political demand. There was, however, recognition, that the foreign-led industrial development model had to shift to a greater focus on indigenous industry. This was endorsed by the 1996 *Shaping Our Future, A Strategy for Enterprise in Ireland in the 21st Century* (Forfás, 1996) report. A shift towards higher skilled, knowledge intensive projects to achieve well-paid, sustainable employment became the new industrial development goal. Sustainable companies would in turn lead to jobs.

This report identified high growth niches in the global market where Ireland's indigenous industry could create clusters that would become internationally competitive. This section of the report was largely based on sectors identified by An Bord Tráchtála (Irish trade board, now part of Enterprise Ireland), whose officials had been assisting indigenous interactive media companies in identifying international markets. Significantly the interactive media sector was identified on the secondary list of sectors for indigenous growth. Although it was not on the primary list, this was an important independent endorsement of the sector by the highest level of industrial

policy decision makers but did not in itself guarantee it specialised support. This represented the first time that interactive media, as a sector, had been recognised on a national level for specific targeted support.

Internet's growth triggers new action

The indigenous interactive media industry sector's advocacy coalition began to expand nationally, helped by the growth of the interactive media industry internationally. An important internal trigger for policymaking came from recommendations from a body set-up by the state to make recommendations on science policy - the Irish Council for Science, Technology and Innovation (ICSTI). This was a body of experts from industry, academia and the public sector appointed by the government to advise it on policy related issues in the science and technical fields. It could advise at the request of the government or at its own initiative. In March 1998, the ICSTI was requested to undertake a Technology Foresight exercise to examine emerging science and technology issues and advise on how the state should change its policies to meet these (ICSTI/Forfás, 1999, p. 1). The results were to feed into the preparation of the National Development Plan that would outline Ireland's future development from 2000 to 2006. It would also guide future allocations of exchequer funding for science and technology. The ICSTI identified eight sectors for consideration, based on areas where Ireland already had some competitive advantage.

Information and Communication Technologies – of which interactive media is a key component - was selected as one of these areas. An expert panel of 22 people drawn from industry, both indigenous and TNC, research institutes, academia and state

enterprise promotion agencies, was appointed to draw up the report. Submissions were sought from industry and academia and a workshop was held to garner expert views on the issues. Direct interviews were held with outside experts. A website set up for the purpose of obtaining people's opinions had 150 people registered as interested in the discussion and 3,000 visitors (Forfás/ICSTI, *Technology Foresight Ireland*, ICT panel 1999, p. 26). ICSTI made several important recommendations that would be used later at a governmental level to endorse policy actions salient to the development of the Irish indigenous interactive media industry (Forfás 1999a, pps 1-3).

The most critical of these was its recommendation to establish a Centre for Advanced Informatics in ICT-related disciplines, composed of over 200 post-doctoral researchers doing world-class industry related work. ICSTI recommended linking with established centres like Massachusetts Institute of Technology, Stanford Research Institute or University of Washington. The rationale for this investment was to help bring the overseas and indigenous Irish Information and Communications Technology industry to the next phase of its development, as it was seen as too reliant on mature technologies. The centre would aim to create a cadre of world-class professional researchers who would form the nucleus of new world class companies. This recommendation was to be used later on by the Department of the Taoiseach to justify state investment in Media Lab Europe. This would be a digital media research centre in Dublin with backing from the world-leading MIT Media Lab in Boston.

These recommendations were incorporated into the final report of the ICSTI, *Technology Foresight Ireland* (Forfás/ICSTI, 1999). It said Ireland should invest

heavily in research in niche areas of information and communications technologies and biotechnology. These two areas were identified by the panels as being the engines for growth in the global economy (Forfás/ICSTI, 1999 p. 8). Fiscal policies to promote research and development and promotion of a culture of innovation were also proposed. The Technology Foresight's core recommendation to establish a €635m (IR£500m) five-year fund for investment in research in ICT and biotechnology areas was accepted by the Irish government and incorporated into the National Development Plan, 2000-2007. A portion of this funding went into interactive media research, again mainly Media Lab Europe.

The growth of interactive media industries internationally, particularly America, acted as another policy trigger from the mid-1990s onwards. This could be seen to be a Leader Laggard Model of agenda triggering, as explained in the literature review, Chapter 2. A specific policy window did open in 1996, triggered initially by external factors outside of the interactive media advocacy coalition. Interactive media technology advances and other countries', particularly America's, policies to encourage public utilisation of digital media provided the next trigger for change. America's "Information Superhighway" policies diffused into Irish policymaking through attendance by a then assistant secretary general in the Department of Transport and Communications, Brendan Tuohy, at international conferences where this was discussed. Other European countries such as France and Britain, key competitors to America in technology, were anxious to avoid a policy gap and had started to introduce similar national programmes. Media reports of these policies coupled with pressure from industry groups and academics prompted the Irish government to establish an Information Society Commission.

The commission's remit was not to try to develop interactive media companies. Rather to encourage the use of new technology throughout society. It did, however, have two important impacts on the policymaking structure for the indigenous interactive media sector. An unpublished study commissioned by the Information Society Commission proposed the development of an interactive media hub to help cluster the nascent interactive media sector. This report was completed by Irish academics that had been monitoring the development of the sector in Ireland and overseas. Most of these proposals were not implemented at the time but similar proposals were acted upon several years later. It appears the commission was reluctant to make policy proposals relating to the industry or multimedia content, viewing it as outside its remit. Secondly, it represented a new top down approach to policymaking for the interactive media sector and a widening of its advocacy coalition from a small number of experts to national committees reporting to government.

Copyright and related rights act influence

While not solely related to the interactive media industry, the triggers for two other policy actions that affected the sector came from trans-national corporations with bases in Ireland. The first was the stringent Copyright and Related Rights Act 2000, which imposed the strictest penalties in Europe for software and interactive media copyright infringements. This was enacted largely due to intense lobbying of the Irish government, funded directly by American software companies.

The Republic's copyright legislation was, up until 2000, based on the Copyright Act 1963, which meant that with the many of the advances in software, fines for piracy and proofs, were outmoded. Software is written as code, so it is covered by copyright

legislation in Ireland and internationally. The legal right to protect the components of an interactive media product that may contain graphics, sound, software code and text, is enshrined in copyright legislation, not patent law, under which most other products are protected. The importance to the indigenous Irish interactive media industry in having rigid copyright legislation was highlighted in *Multimedia Ireland: Realizing the Potential* (Farrell Grant Sparks/Enterprise Ireland, 1999, p. 6). No representations were made on behalf of the indigenous interactive media sector during the drafting and public consultation of the new copyright legislation; instead most lobbying was done by the Business Software Alliance, a non-profit organisation funded by the world's largest software companies like Microsoft, Novell and Apple.

The Business Software Alliance was also a member of International Intellectual Property Association (IIPA), an umbrella group for a number of more powerful interest groups in the American intellectual property community. The Business Software Alliance set-up an Irish section in 1997 and began to lobby the Irish government for tougher Irish copyright laws. It hired Business Insight, a political lobby consultancy run by two former aides of the then minister for enterprise, trade and employment, to conduct its negotiations with her and her departmental officials. It had 33 direct contacts with the relevant ministers, the Taoiseach and civil servants, during the drafting of the legislation between May 1997 and August 2000 (Internal documents, Intellectual Property Unit (IPU), Department of Enterprise, Trade and Employment), making it one of the most active lobbyists in the area.

In late 1997, the American authorities asked the World Trade Organisation (WTO) to examine whether Ireland had complied with the Trade-Related Aspects of Intellectual

Property Rights' (TRIPs) Agreement, which had become binding for developed countries on 1 January, 1999. The TRIPs agreement called for minimum standards of protection for categories of intellectual property with civil and criminal sanctions for abuse. The International Intellectual Property Association (IIPA) also included Ireland in the American trade authorities' 1997 and 1998 "Special 301 Watch List" for not providing adequate copyright protection. However, the WTO action was suspended after the Irish authorities gave an undertaking to the American trade authorities that it would enact comprehensive legislation to make Irish law comply with the TRIPs agreement (internal briefing document for An Taoiseach, 9 March 1999, from IPU, Dept of Enterprise, Trade and Employment). The first of these undertakings was achieved in the Intellectual Property (Miscellaneous Provisions) Act, 1998 which was enacted in July 1998.

This substantially increased penalties for copyright offences. The Business Software Alliance commissioned PricewaterhouseCoopers to analyse the economic rationale for tougher copyright legislation. PricewaterhouseCoopers, an international business consultancy, in May 1998, submitted to the Irish Department of Enterprise Trade and Employment a report entitled *The Irish Software Export Industry: Contribution at Current and Reduced European Piracy Levels*. The report quoted "industry estimates" that PC business software piracy rates averaged 70 percent in Ireland in 1996, compared to 43 percent in Western Europe and 27 in America (PricewaterhouseCoopers, 1998, p. 4). The Business Software Alliance estimated that piracy cost software producers \$46.8m in 1996 in lost Irish revenue. The report outlined the fact that as Ireland was Europe's largest software producer, a reduction in piracy throughout Europe, starting with Ireland as an example, would have a

disproportionate beneficial effect in terms of employment, tax revenue and exports. The Business Software Alliance engaged lawyers in Ireland, London, Washington and Edinburgh for various different negotiations with the Irish civil servants drafting the legislation in Ireland. Such was the relationship that they provided drafts of legislation not yet incorporated in another European country to the Irish civil servants drafting the bill for inclusion (Internal correspondence from BSA to IPU Unit of Department of Enterprise, Trade and Employment, 1999). At various meetings from 1998 to 2000, between Microsoft's most senior executives and Irish government ministers, the matter of copyright legislation was discussed.

Officials in the American government were also used by these companies to lobby the Irish authorities. When the Taoiseach attended the White House, Washington, for his traditional St Patrick's Day visit, the matter of Irish copyright legislation was also raised by American officials with him. A draft of a more substantive piece of legislation, the Copyright and Related Rights' Bill was published on 31 July 1998. This was most unusual for the Irish Government to publish a draft for consultation but it was aimed at showing the American authorities its progress in the area. This was the largest piece of legislation to be proposed to the Irish parliament (Internal documents, Intellectual Property Unit (IPU), Department of Enterprise, Trade and Employment, 20 April, 1999).

It was not only the American authorities and TNCs that were putting pressure on Irish policymakers. The European Commission also wanted Ireland to incorporate into its legislation various EU directives on copyright and related rights, according to an interview given in 2002 to the author by John Rutledge of the Intellectual Property

Rights' Unit, Department of Enterprise, Trade and Employment (Appendix G). The European Commission had sued Ireland in the European courts for failure to implement EU directives in the area. The International Intellectual Property Association (IIPA), however, did not accept that the 1998 proposed Irish legislation was strict enough and allowed adequate witness protection. The IIPA wanted the American trade authorities to place Ireland on a "Priority Watch List" in 1999 as a flagrant transgressor of the TRIPs agreement. The Business Software Alliance was the principal lobby group in Ireland on behalf of International Intellectual Property Association (IIPA). To meet the demands of the IIPA, the Business Software Alliances' lawyers were allowed to enter into negotiations with the Office of the Attorney General. At a meeting on 25 February, 1999, with the Business Software Alliance, the Department of Enterprise, Trade and Employment, gave details to them of enhanced civil remedies to be incorporated in the published Copyright and Related Rights' Bill (Internal documents, Intellectual Property Unit (IPU), Department of Enterprise, Trade and Employment). These were to the satisfaction of the Business Software Alliance. The Irish authorities communicated these to the US trade authorities in order to keep Ireland off its "Priority Watch List" in 1999 and prevent a resumption of the WTO action.

The National Newspapers of Ireland (NNI) also succeeded in having the proposed legislation changed. The NNI, which represents most national and daily newspapers in the Republic, achieved this by intense formal and informal lobbying of government ministers and officials of the IPU Unit (various internal documents in the IPU Unit of Enterprise, Trade and Employment, 1998-2000). The largest Irish newspapers, *The Irish Times*, *The Examiner* and Independent News & Media, were investing in

producing Internet versions of their publications and also syndicating copying onto online databases. Under the 1963 Irish copyright legislation, however, the newspapers did not have copyright to do this; they only had copyright to publish work in their newspapers. They depended on separate contracts with journalists, or more frequently journalists' ignorance of the law or informal acceptance, to reproduce the material on Internet versions and interactive databases. The amendments to the 1963 legislation which NNI secured through lobbying by senior executives of newspapers, lawyers and lobbyists of the relevant ministers and civil servants in the IPU section, gave the newspaper proprietors copyright on all material produced by their staff under the new legislation. This meant that the newspaper proprietors did not have to pay for additional Internet or database use of material. These arguably placed newspapers at a competitive advantage over any other content provider who might want to enter, or was already in, the online Irish publishing market. The effect that this change in legislation would have on the development of the indigenous interactive media industry was not considered by the IPU civil servants, according to an interview with J Rutledge (Appendix G). The enhanced penalties for breaches of software copyright, brought about largely by forces outside of Ireland, would however be beneficial to Irish indigenous interactive media companies. Thus the agenda for policymaking in an important part of Irish law was largely dictated by outside forces and lobby groups.

TNCs spur state into telecommunications upgrade

The TNC sector had an important role in triggering the upgrading of the telecommunications system which too had a beneficial impact on the indigenous interactive media sector. This influence was evident too in another area - the state's subsidising of the provision of enough broadband capacity to service the needs of

Europe from Ireland. The trigger for fast tracking this into policymaking came indirectly at the behest of Microsoft and IDA Ireland. However, even before the pressure came from these quarters, Irish officials charged with communications policy had been considering it. They had been attending European Union technical meetings on communication and could see the evolving map of interactive communications throughout Europe.

Various outside actors, some state and others in the private sector, were applying pressure too on the Department of Public Enterprise to liberalise the Irish telecommunications market, reduce costs and introduce broadband connectivity. Official reports from Forfás, the Irish state's industrial development policy advisory body, (Forfás, 1998; National Competitiveness Council, 1998) and IBEC, the Irish employers group (IBEC, 1998) had advocated urgent action to upgrade the telecommunications infrastructure to broadband. IDA Ireland through unofficial briefings to the Department of Public Enterprise, according to Brendan Morrissey and James Gallagher in an interview with the author 1999 (Appendix G), had been demanding greater action on providing broadband connectivity, largely to facilitate American TNC's who ran their European operations from Ireland. A network of assistant secretaries, those second in command of the relevant government departments, had also been charged by the government of defining policy actions to promote the development of the Information Society in Ireland.

The problems arising from the lack of competition in Irish communications (until Telecom Eireann lost its monopoly in December 1998) and limited broadband connectivity came to a head in early 1998 and galvanised government support for

action. Microsoft, then the world's largest software company, had opted to expand its so-called ~~mirror~~" Internet site in London instead of transferring it to Dublin, where its European operations centre was headquartered. Microsoft's base in Ireland, set up in 1985, is strategically critical to Ireland in attracting foreign investment, as it demonstrates to other TNC's Ireland's attractiveness. It is seen as a technology leader and it paid over €52m in tax alone in 1999 to the Irish exchequer, making it one of the country's largest tax payers (Department of Enterprise, Trade and Employment, 1998, internal briefing document on Microsoft, unpublished). In reaction to Microsoft's concerns about the Irish telecommunications infrastructure, the Department of Enterprise, Trade and Employment, devised a strategy whereby Forfás, IDA Ireland and the Department of Public Enterprise and Dept of Enterprise, Trade and Employment, would co-ordinate their efforts to ensure that Microsoft's next internet investment - electronic commerce - would be hosted in Ireland (Dept of Enterprise, Trade and Employment, 1998, internal briefing document on Microsoft).

The briefing document stated: ~~Ireland~~ urgently needs to provide this infrastructure if it is to compete in this new way of doing business" (Dept of Enterprise, Trade and Employment, 1998, [internal briefing document on Microsoft]). The internal document pointed out that the electronic commerce element of Microsoft's European strategy would be more suited to Ireland, as it was revenue generating and thus Ireland's 10% corporation profit tax [2000], one of the lowest in Europe, would make the Republic a more advantageous location than London for this. The ~~mirror~~" site in London did not generate revenue.

Another internal briefing document provided by the department of Public Enterprise to the Department of Enterprise, Trade and Employment, details wider policy options:

The objective of ensuring that Ireland is well placed to pursue the opportunities of electronic commerce necessitates the development of an infrastructure of competitive state-of-the-art Internet services. The recent loss of the Microsoft mirror site is a stark illustration of the shortcomings of the Irish Internet services in the context of high volume business requirements.

An internal unpublished briefing document in 1998 for the Minister for Enterprise Trade and Employment pointed out that failure to address this underdevelopment means (Enterprise, Trade and Employment 1998, p. 1, internal briefing document for minister, unpublished):

A loss of potential to exploit electronic commerce and to capture the associated direct economic benefits.....It is therefore desirable that the key deficiencies of the Internet services sector in Ireland be identified and that a strategy be devised to promote investment to redress these shortcomings.

This document outlined the lack of online content providers in Ireland, absence of a global Internet backbone connectivity and lack of business website and data management capability. It is clear from the documents that it was pressure from IDA Ireland, who wanted to attract and retain TNC investment that was focusing the department's attention on the issue and not any desire to help the indigenous sector. The Department of Public Enterprise outlined three options for varying degrees of state intervention to overcome these problems. They amounted to different public/private funding mechanisms by which a direct fibre optic broadband link between Ireland, America and the major European electronic centres could be provided.

The media coverage of the criticisms that Microsoft had of the Irish communications infrastructure led to inquiries from the Department of Finance to Enterprise, Trade and Employment and Public Enterprise about deficiencies in Ireland's communications system. It also led to five questions being raised in Dáil Eireann, the Irish parliament, from the opposition to the Minister for Enterprise, Trade and Employment, over the deficiencies in the telecommunications network (Dáil record, 26 May, 1998). A meeting was held in Seattle, Washington, Microsoft's world headquarters on 11 May, 1998, between Mary Harney, then An Tanaiste (deputy prime minister), Bob Herbold, the chief operating officer of Microsoft, Kevin Dillon, then Microsoft's general manager, Europe and Kevin McGowan, chief executive of IDA Ireland. The meeting was to assure Microsoft that the Irish government was committed to providing the necessary telecommunications infrastructure to enable large-scale interactive commerce. Bob Herbold, chief operating officer of Microsoft, effectively the third most important executive in the company, said that speed at which the Irish government moved to provide adequate infrastructure was impressive, according to a briefing attended by the author and given by Bob Herbold in 2000 (Appendix G). Other meetings were held over the next two years between Herbold and senior Irish politicians over meeting Microsoft's requirements for its e-commerce operations, according to B Herbold (Appendix G).

A month after details of the Microsoft concerns became public, a Telecommunications Advisory Committee (TAC) was formed by Mary O'Rourke, Minister for Public Enterprise, in June, 1998. Its genesis, though probably speeded up after the Microsoft criticisms the previous month, had been some time earlier after Brendan Tuohy, then assistant secretary in charge of the communications division of

the department of Public Enterprise, attended a conference on the issue in Ottawa, Canada in 1997. The committee was comprised of international communications industry leaders, mainly from America, representing diverse areas of expertise and experience and senior Irish officials. The committee was charged with advising the Minister for Public Enterprise, who had responsibility for the Republic's communications infrastructure, on a strategy to position Ireland as a key global centre in advanced telecommunications, the Internet and electronic commerce.

The committee included Vincent Cerf of American communications company MCI. Cerf is credited with inventing part of the Internet. Some officials from the Department of Public Enterprise, Forfás and Enterprise and Employment also attended its meetings but were not members. Advice on which international experts should be on the committee was largely provided by IDA Ireland and the Department of Foreign Affairs. IDA Ireland also had a representative on the advisory committee. There were no representatives on the committee from the indigenous interactive media industry nor were any submissions made on its behalf to the committee. The committee made an interim report and in October 1998 published its final report. There were 10 recommendations aimed at ensuring that Ireland became a global leader in the growth of information-based employment and in the formation of Internet-based industries and electronic commerce amongst other things. It pointed out that electronic commerce will migrate towards those countries which are to the fore in providing low cost, high quality telecommunications and Internet services, supportive legal and business regimes, and a highly entrepreneurial and technically skilled workforce (Telecommunications Advisory Group 1998, summary). Given that neither physical size nor location dictates success, it said that Ireland could, with

appropriate strategic positioning, sustain its position as Europe's premier knowledge economy. It called for a proactive role from the government in addressing four critical enablers: the acceleration of telecommunications competition; the promotion of Internet access and connectivity; the facilitation of electronic commerce; and the development of human resources. It added that the lack of broadband, international services and of competitively priced local broadband access was then a serious burden on Irish business and a brake on employment growth.

On future skills needs, the committee recommended that the report of the Expert Group on Future Skills Needs should be implemented as a priority. There was a need also to examine more fully the skills needs for new types of activity in the electronic commerce area, particularly in relation to creative skills and content skills. The report also recommended the creation of two interactive media centres in Dublin, one close to the city centre for creative interactive media, and one at the proposed National Digital Park for e-commerce and software. Forfás conducted a feasibility study on these proposals recommending they proceed (Telecommunications Advisory Committee, 1998).

This acted as an important trigger for policy action. The responsibility for implementing many of the other recommendations fell on the Communications Development Section of the Communications Division in the Department of Public Enterprise. It advertised for tenders in 1998 for companies to provide broadband connectivity around the country on a subsidised basis. A total of €21m (IR£17m) in subsidies was awarded to bring broadband to places like Galway, Cork, Athlone, Ennis and the west coast. The funding for these projects came from EU Structural

Funds originally intended for energy projects but which was unspent. However, other centres like Donegal, Wicklow, Cavan, Monaghan, Offaly and Laois were excluded, as even with the subsidy telecommunication companies were not interested, citing the low level of population and existing businesses in these areas making such connections commercially unviable.

While it would seem from the documentary evidence that all the triggers for policy action in broadband telecommunications were coming from external foreign actors, or their internal representatives in the form of IDA Ireland, a closer examination indicates that it was more complex than this. There was a large amount of systematic intelligence gathering going on within the telecommunications development division of the Department of Public Enterprise, and this had created internal policy entrepreneurs.

Agile department leads to quick action

Responsibility for formulating policy for the development of the telecommunications infrastructure in the Republic rests with a division within the then Department of Public Enterprise (later re-named Communications and Natural Resources). The Irish Communications Development section had, during the period of this study, four full-time civil servants. It also had in the late 1990s a specialist communications engineer seconded to it from An Post, the state owned postal company. This model of public administration in Ireland differs from many elsewhere in Europe in a number of respects. Firstly, the majority of Irish civil servants are not normally qualified in the area of responsibility as they usually only spend three years in each section unless they are a specialist grade. While they usually become quite expert very quickly in whatever field they are placed, they are effectively trained to be all-round

administrators and generalists. This section of the department contracted in specialist assistance when required. For example, they used American lawyers who specialised in communications regulation to advise them on some proposed EU legislation. Due to Ireland's small size, 3.6m people in 1996, departments are much smaller than found in larger EU countries.

This also limits the scope for specialisation amongst civil servants. At the telecommunications working groups in Brussels, where civil servants discuss EU policy on communications, the larger countries often have up to 20 specialists attending. The larger countries change their representatives as they move to different specialist areas of the agenda. The Irish delegation normally has only one person to attend the entire meeting. While this lack of expertise may be a disadvantage in some instances, it also speeds up decision-making, as there is little bureaucracy according to B Morrissey and J Gallagher in a 1999 interview with the author (Appendix G). Billy Morrissey (Appendix G), an official in the communications development division who attended these meetings, said: "This reduces bureaucracy and allows us to cross match ideas [of different countries] and have rapid implementation. Our competitive advantage is that we are small and the speed of decision is quick."

It also allows the Irish civil servants to get an overall picture of evolving communications policy within the EU, as they hear the full discussion from every country and do not get sidetracked by very specific technical details, according to B Morrissey and J Gallagher (Appendix G).

These EU meetings, the IDA Ireland and the economic attaché at the Irish embassy in Washington feed information into these four civil servants about communications developments, according to an interview with B Morrissey and J Gallagher in 1999

(Appendix G). Attendances at international conferences, Organisation for Economic Co-operation and Development (OECD) publications and informal and formal contact with Forfás, the industrial policy agency, are the main forms of external input into the division. IDA Ireland briefs these officials on communication developments in countries with which Ireland is bidding for projects, for example Holland and on existing TNC companies' future requirements. The officials keep themselves briefed on developments in countries with advanced communications infrastructures like Singapore, Finland and Sweden. Lobbying by local representative groups like the Irish Business and Employers' Confederation and telecommunications companies usually is directed at their minister.

In early 1998, the Communications Development Section began to look seriously at improving broadband connectivity based on the fact that IDA Ireland wanted to attract e-commerce companies and retain some existing ones, according to an interview in 1999 with B Morrissey and J Gallagher (Appendix G). This was before Microsoft's perceived difficulties with the existing Irish infrastructure came into the public domain. The public debate about Microsoft's difficulties with the Irish infrastructure helped to give agenda status to proposals already being formulated by internal policy entrepreneurs. It then made it easier to get support of key decision makers both in government departments and then government itself for these proposals.

The international growth of interactive media towards the end of the 1990s and early 2000s provoked a number of business people with close connections to government to begin to propose policy measures to develop the sector in Ireland. The business people were generally those who had had some connection with telecommunications or interactive media and could see its growth potential. They had altruistic motivation

in making their proposals and direct access to the relevant senior politicians through existing inter-personal relationships. Thus these external policy entrepreneurs began to trigger policymaking around 2000.

The Department of the Taoiseach provides a secretariat to the government but also takes on special projects that do not fall easily under one single department. For example the Information Society Commission was under the remit of this department, as was the Law Reform Commission (IPA 1998, p. 64). It can also be viewed as symbolic when a particular project comes under the control of this department, as it can be seen as a flagship programme for the government. It is in this context that Media Lab Europe should be seen.

The MIT Media Laboratory, based in Boston, had unsuccessfully tried to establish a stand-alone research institute in Germany in the late 1990s. The Media Lab had since its establishment in 1985 become one of the world's leading centres for research into innovative uses of technology. At a conference in Dublin addressed by Nicholas Negroponte, the director of Media Lab, he privately told a number of Irish business people in attendance of the difficulty he had experienced setting-up and getting the necessary financial support to establish in Europe. The businessmen suggested Negroponte consider Dublin as a possible location and they arranged for him to meet Bertie Ahern, the then Taoiseach, to outline the type of funding required. The Taoiseach gave the project conditional support and handed responsibility for it to the Economic and Social Policy division of his department. The decision making that eventually backed the project is outlined in the next section.

Triggering the service sector

This section analyses how the indigenous interactive media industry/digital media was chosen to be targeted by the Irish state for development along with three other sectors in 1999. The next trigger for policymaking for interactive media, in 1999, was again from the top down. There was political pressure from the European Union, government, opposition and from officials to better develop the indigenous internationally traded services sector. Ireland had almost reached full-employment by 1999. The greater Dublin area was congested and thus there was political pressure for better state support for regional development. There was also a need to make the employment base more value-added to prevent the move of jobs to cheaper countries. To respond to this political pressure, Enterprise Ireland had to formulate a strategic plan to develop clusters on a regional basis of internationally competitive service companies. Enterprise Ireland had been formed in 1998 by the amalgamation of Forbairt, An Bord Tráchtála and part of Fás, the training agency that dealt with in-company training.

An analysis of the statistics demonstrates the problem. In 1995, the year when comparative international data was available, 58% of total employment in the Republic was in services, compared to the EU average of 66% and America at 75%. A further breakdown shows that in that year, 1995, the share of market services (as opposed to public ones like health and education) in the Republic was 33% of employment and 41% of value added services (see table 5.1: Employment and valued added in services sector, 1995). This was the lowest of any member state in the European Union, according to Eurostat's *Services in Europe* report (Eurostat, 1998).

It was not as if the Irish state had not been making efforts to develop its service sector. The Irish state had since 1986 been designating what elements of the internationally traded service sector would be eligible for state subsidy and other supports (See Appendix E for those qualifying for 10% profit tax). The level of state support and 10% profit tax had to be agreed with the EU commission in Brussels to comply with EU competition law. This was to ensure that domestic and EU wide competition was not distorted. It had become common throughout the industrialised world from the mid 1980s for states to subsidise the development of internationally traded services. They were seen as good potential export revenue earners and contributed high value services added to economic activity. Enterprise Ireland stated: –The rationale for the selective support for tradable services, as opposed to domestic services, is widely accepted by industrial development agencies and governments throughout the industrialized world” (Enterprise Ireland, 2000, April 13, p. 2, *ITS 2007*, draft summary document).

As far back as 1997, a Services Strategy published by Forbairt set-out a more detailed graduated system of support for internationally traded companies in designated sectors. This gave state subsidies and other supports not solely on a sector basis but also on a regional basis in order to encourage regional development. This support ranged from a basic level of information and advice to access to the full range of grant aid and equity investment. Interactive media was not specifically designated until Enterprise Ireland was being formed in 1998 and the list of designated service sectors was reviewed as part of the new legislation passing through the Irish parliament. Enterprise Ireland was formed in 1998 through the amalgamation of two state enterprise promotion agencies, Forbairt and An Bord Trachtála and the part of Fas,

the state training agency dealing with in-company training to form a “one stop shop” for business support. Companies in interactive media had received state support by qualifying as software producers, a sector that had been designated in 1986. The aim of designating new sectors, Mary Harney, the then Minister for Enterprise and Employment, said was that Ireland would become an “early mover” in these new electronic services (Dáil debate, 1999, 24 March). Also added to the list were electronic commerce and logistics management services. The trigger to designate digital media seems to have come internally from the state enterprise agencies, which could clearly see it had become a different sector to software.

The Republic was not performing poorly in all areas of services and in some classifications actually exceeded the EU average (see table 5.1 following). An example of this is its strong performance in software exports. The difficulty, however, was that outside of software the Republic was over represented in the lower value added service sectors like distribution, hotels, restaurants and cafes. The latter was largely due to a strong tourism sector, which is generally low value added. It was under-represented in higher value sectors compared to the EU average (PricewaterhouseCoopers 1999, p. 7). One of the few high value added service sectors to develop was financial services. This was principally due to the growth of the International Financial Services Centre, as a result of a previous government initiative to create a tax-free international financial hub in Dublin docklands.

Table 5.1: Employment and valued added in services sector, 1995.

	EU-15	USA	Japan	Ireland
Employment (millions)				
Market services	64.6m	62.4m	33.4m	0.4m
(% of total employment)	45%	52%	50%	33%
Non-market services	29.7m	27.7m	5.8m	0.3m
(% of total employment)	21%	23%	9%	25%

(Source: Eurostat (1998). *Services in Europe*).

In the latter half of the 1990s, however, Ireland's service sector was growing strongly and had reached 63% of total employment by 1998. Enterprise Ireland estimated that in 1998, the indigenous internationally traded service companies employed 19,000 people. They had sales of €3.55bn which included €1.14bn of exports. The enterprise agency estimated that half of employment and exports were accounted for by the indigenous software sector. There remained, however, an impression supported by statistics that the Republic had not kept pace with developed western economies in developing its service sector. John Perry, a Fine Gael opposition spokesman, summoned up the view that compared to America, Ireland had done poorly (Dáil debate, 1999, 24 March):

Given that the service sector has been neglected I am pleased emerging businesses are coming forward. I hope they are better supported than they have been to date. In America, the greatest job creator is the service sector.

With unemployment in the Republic at 5.7% in 1999, a historically low rate, there was logic in targeting future development at the higher level of value-added sectors. There was evidence, mainly from Eurostat, the EU statistics agency, that internationally traded services were significantly higher in adding value to the

economy than any other sector. Thus it made strategic sense to focus a tightening labour market on more valued added sectors rather than low value manufacturing, agriculture, forestry and fishery, building and construction. The logic in developing the indigenous internationally traded service sector was set out to Enterprise Ireland's board in April 2000. This was in the draft summary document of *ITS 2007*, prepared for Enterprise Ireland's board, April 13, 2000, which was unpublished. —The services sector is now the fastest growing sector of most progressive economies...we are still behind the international average. Within the services sector, it is the knowledge intensive internationally traded services that represent the greatest opportunity for Ireland in terms of both wealth creation and exports (PWC, 2000. Draft summary document of *ITS 2007*, prepared for Enterprise Ireland's board, April 13, 2000, unpublished).

The triggering mechanism for a greater emphasis to be placed by the state on developing the services sector was the 1999 National Development Plan. This was a joint programme agreed between the European Union and Irish government, aimed at bringing the Irish economy closer to the EU average. The EU and Irish state had identified the underdevelopment of high value services. The plan provided a budget of €5.4m, mainly supplied by the EU, under Measure 3 of the Small Business Operational Programme for studies in emerging service sectors.

There was party political pressure to develop the internationally traded services sector. This put it on the political agenda. Mary Harney, the then Minister for Enterprise and Employment, was leader of the Progressive Democrat party, a right of centre pro-enterprise but socially liberal party. Its main support base was middle class

Ireland and the private sector. Its 1997 election manifesto had promised measures to develop indigenous industry and reform the enterprise support agencies. The programme for government agreed between Fianna Fáil, the largest party, and the Progressive Democrats, *An Action Programme for the Millennium* (Government Publications, 1997), which committed the government to examine the growth potential of small business and the services sector amongst other things.

The programme also committed the government to making the state enterprise promotion agencies more client focused and providing more seed and early stage capital to enterprises. Harney stated that: “A focused services strategy is something that I have sought to bring about since shortly after taking-up office in June 1997” (Enterprise and Employment, 2000). There was also lobbying of the minister and her departmental officials by the Irish Coalition of Service Industries and Services Council of the Irish Business and Employers’ Confederation (IBEC), two-industry lobby groups, for such a strategy to support its members. Imports of services, such as consultancy and software services, had increased as the Republic’s economic grew in the late 1990s. Thus indigenous development of these services was also aimed at reducing imports and improving the balance of trade. The consensus on developing the service sector was embodied in the 1999 *Programme for Prosperity and Fairness*, an agreement between the government, main unions, farmers, employer’s representatives and other social groupings. It committed the government to pursuing actions to develop the indigenous international service sector, particularly moving it up the value chain. The programme committed to fostering development, particularly of Irish owned businesses, with a special focus on high value-added, high skills projects (Government Publications, 1999).

The programme also attempted to marry the undeveloped service sector problem with a second problem. This was the unbalanced geographical development of the international service sector in the greater Dublin area. A third of the Republic's population in 1999 lived in the greater Dublin area, but it accounted for a disproportionate 70% of employment in indigenous internationally traded service companies (Enterprise Ireland 2000, p. 11). The *Programme for Prosperity and Fairness* had also pointed out that it was imperative that the government pursue economic regionalisation. It should be noted, however, that the service sector study was underway as this programme was being agreed. Its endorsement, however, was important, as it committed the government to implementing the study's findings. It effectively gave the outcome of the study agenda status. The methodology of the study and how it led to specific policy measures for the interactive media sector is discussed in the next section on policy formation.

A key difficulty in making policy for the interactive media sector was that technology, business models and consumer demand were changing rapidly. Intelligence gathered internationally by consultants to feed into policy formation was almost out of date as soon as it was written down. By the time it had been formulated into policy, after getting the requisite government or agency board sanction, it was very much out of date.

By 2000, the state's policymaking apparatus, principally Forfás which co-ordinated state enterprise policy, began to take control of setting the agenda for interactive media. The state's policymaking apparatus was beginning to work. Forfás was gathering intelligence internationally on interactive media and trying to put in place

policies that would enable the Irish sector, both indigenous and TNCs, to leapfrog the international competition. More international interactive media companies, principally American ones, were being attracted to Ireland. So Forfás' activities were aimed at developing both the infrastructure to host these as well as develop the indigenous sector.

In summary, triggers to put the sector on the policy agenda came externally from outside the political system. They were technological advances outside the state and policies introduced in rival states. TNC companies, with significant operations in Ireland, both directly and indirectly through views articulated to government by state agencies on their behalf, also acted as a trigger for policy. Others came top down internally and indirectly from government, when it was found by the enterprise promotion agencies that the interactive media sector conveniently matched the political need. This was a political goal to:

- a) In 1996 to shift industrial policy towards building indigenous clusters of internationally competitive, knowledge intensive, high value added services.
- b) In 2000 for the government to seem to be taking a world-leading role in the development of the so-called information society.
- c) In 2000 for the government to be seen to be developing international service industries in the regions.

It is significant that the interactive media industry itself, while supportive of these policy decisions, did not play an active role in triggering them although they were the ultimate beneficiaries. A reason for this was the nascent state and lack of profitability that meant that political campaigns could not be financed by the sector. It was also, by

2000, no longer organised into an effective lobby group. The other explanation is that since the state was, at punctuated times, pursuing policies the industry supported, there was little need to expend energy lobbying. When the industry groups met, the main issue for discussions was on technical standards.

In conclusion of this section, triggers for policymaking came from both internal and external policy entrepreneurs. Internally, triggers came from the very top of government – the prime minister's office. They also came from the bottom – enterprise agency officials dealing with interactive media companies on a daily basis. The triggers came from TNC companies, particularly in information technology and were sometimes backed by the governments in their own home country. At times they came through the Regional Diffusion Model – copying what was taking place elsewhere in Europe and trying to leapfrog it. While at other times it came via the Leader Laggard Model – copying what advanced states in interactive media like America were doing. It was only towards the end of the study period that a more systematic approach to policymaking for the sector was adopted by the Irish state. Forfás, the state's enterprise policy co-ordination body, took control of the policymaking agenda for the sector.

Individual executives within the state agencies had become relatively knowledgeable about the sector as they were, through venture capital and grants, some of its main financiers. At a level above these officials – the senior management in the relevant enterprise agencies – there was acknowledgement that the interactive media sector was one for long-term growth. This percolated up to the policymakers. Politicians at the top level from 2000 also accepted this onwards.

The advocacy coalition for the sector had expanded in less than a decade from a few academics, pioneers in the sector and enthusiastic officials, to the highest level of policymaking in the country. While the content of policy recommendations changed little over the study period, those making the proposals did. The actors who made the proposals and the access they had to the levers of power made a significant difference to their success. The interactive media advocacy network shared a set of deep core beliefs as to what the state's policy towards the sector should be. They changed little over the study period. These included education, skills training, marketing funding, R&D grant-aid and measures to encourage demand for their products. In addition to this, members of this coalition had secondary beliefs relating to specific policies they wanted implemented to assist their sector.

Conclusion

In conclusion, the line-up of those seeking state support to develop the interactive digital media sector remained stable over the ten year period of this study. There was a loose alliance of external actors – academics interested in multimedia/digital media, policy entrepreneurs, some indigenous digital media companies, some journalists and industry lobby groups who generally had the same core beliefs. The original lobby group, the IIMA, had an important role in organising the industry in its early stages but ceased to function by 1999. The Irish Audio-Visual Federation and Irish Internet Association were also important formalised lobby groups for the sector. Allied to this group were various sets of internal actors such as consultants commissioned by the state to do reports on the sector. Some officials in the state enterprise development agencies could also be classed as members of this group. There was little change over the 10-year period of the study of the members of this advocacy coalition.

The core belief in the advocacy coalition for interactive media was that the state should assist in the development of the digital media sector in an effort to make it internationally competitive. Few actually articulated how the state should do this – apart from the consultants employed by the state, or the various ad hoc committees charged with making policy recommendations. The external actors were generally dissatisfied with how the state was going about supporting the sector. Their views were articulated formally and informally and through their input into various consultants' reports on their sector, which feed into policymaking. They felt that infrastructure, particularly broadband, was lacking. The generic assistance being given to companies in the sector, they also contended, was not correct. They wanted assistance from the state, geared specifically to aiding the factor conditions that would make the industry competitive. Their core beliefs were largely based on seeing what was being done in competitor countries - Britain, America and Canada – to develop their digital media sectors. The exact form of support was a secondary issue.

The advocacy coalition for the interactive digital media sector did over the period of the study change some of the policy recommendations. This was largely due to technological change, changing business models and the influence of what was happening in competitor neighbouring countries, Britain, America and Canada. But the core belief, tailored state development aid and state investment in broadband infrastructure, did not change. In the next chapter, 6, the case study will be analysed under the next two stages – policy formation and legitimisation and evaluation.

Chapter 6

Analysis of the Policy Formulation to Evaluation Stages of Policymaking for the Indigenous Interactive Media Industry

Introduction

Agenda setting, the first stage of the policymaking process for the indigenous interactive media industry between 1994 and 2004, was analysed in the last chapter. As previously mentioned, this study is using the Stages (Brewer and deLeon, 1983) to give structure to the case study analysis. The next stage under this structure, policy formation and legitimisation, is analysed in-depth in this chapter. It takes a comprehensive in-depth look at the internal mechanisms within the Irish government, ministries and state enterprise development agencies that led to the formation and legitimisation of policy for the sector. It used interviews, public documents, minutes, internal briefing notes, electronic databases - the latter three released under Freedom of Information legislation - to give insights on data not analysed before. This system is then analysed. The final policymaking stage, evaluation of policy, is dealt with at the end of the chapter, albeit in less detail. The evaluation process is analysed, based again on new evidence of what took place within the administration during the case study period. What is generally regarded as the third stage of public policymaking, policy implementation, is outside the scope of this study. However, recognising its importance in giving context to this study, some observations about it as it relates to the case study, are given. This chapter helps answer the primary research question of this study – what was the policymaking process used to develop the indigenous Irish interactive media industry between 1994 and 2004? This chapter is summarised in the conclusion.

Policy formulation and legitimisation

After agenda setting, the next policymaking stage is policy formulation and legitimisation. This section analyses policy formulation and legitimisation in relation to the indigenous interactive media industry. Using data from this case study, five levels of policy formation prior to rejection or approval (see figure 6.1 following) have been identified. During the 10-year time span of this study, there were also two significant institutional changes in how the state's enterprise promotion agencies operated. There were also three changes in government.

For example, the number of levels, amount of time and bureaucracy that a policy initiative has to pass through was largely dependent on the cost of implementation. Generally, the more expensive the implementation, the higher-up the policy chain it went. For example, a major investment increasing the numbers at college studying information technology in 1998 had to go to a full meeting of the 15 members of the Irish cabinet for approval, which this study classes as level 5. These levels are represented diagrammatically in figure 6.1 following.

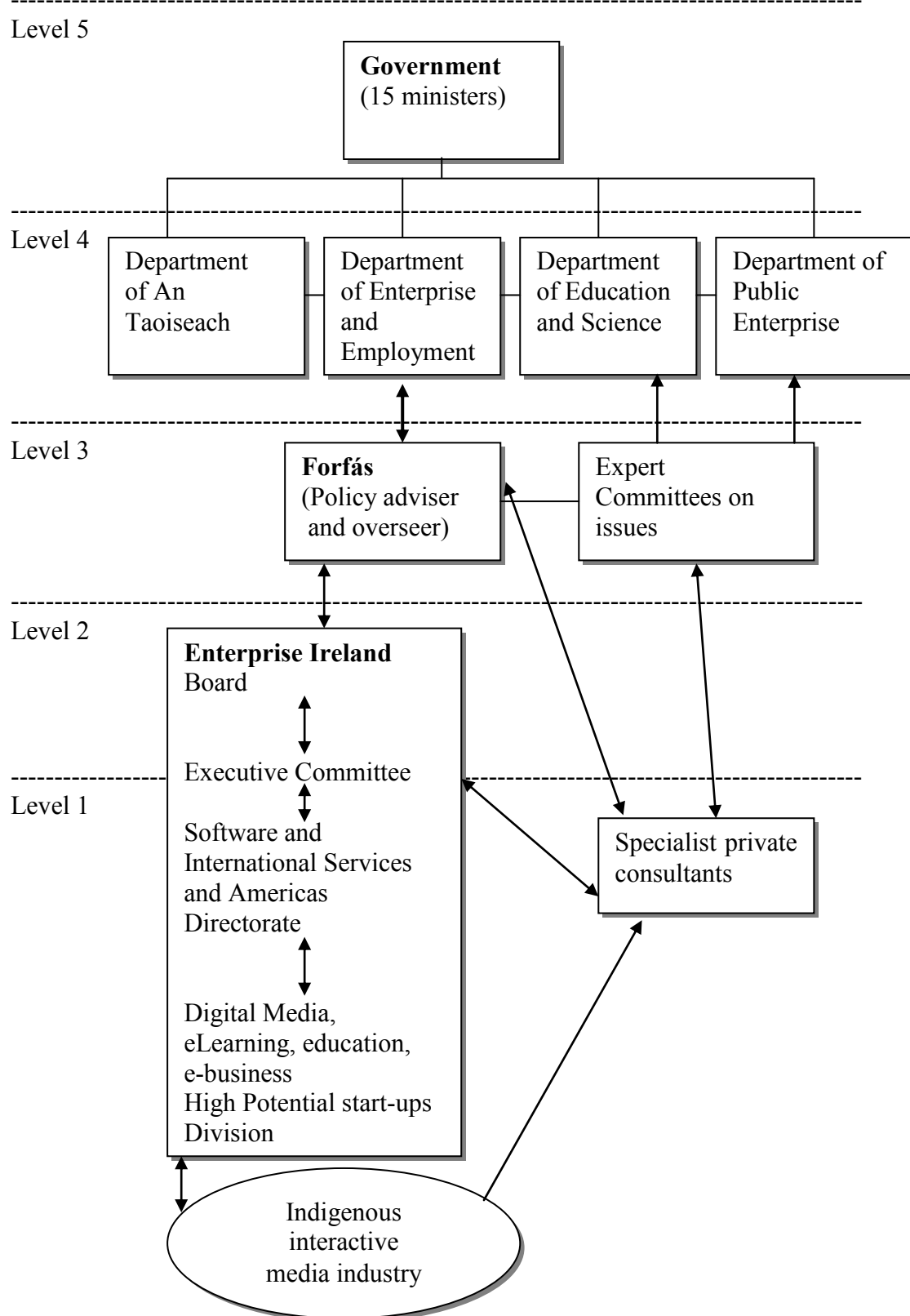
On the other hand, a decision for the National Software Directorate in 1995 to stop directly supporting the emerging interactive media industry development was taken informally by officials in the section with no paperwork to support the conclusion. This is classified for this study as a Level 1 decision, from the bottom rung of the policymaking ladder. But problems for government attention in relation to the development of the interactive media industry came from both internal and external actors. The issues to be addressed for the interactive industry came in to the policymaking system at different levels too, from Level 1 to Level 5, prime minister

level. Generally, the greater the influence of the policy entrepreneur, the higher level they went to with the policy. This study indicated that often the higher the level in the policymaking system that the issue to be addressed entered, the quicker a decision was arrived at and implemented.

The state's involvement in policymaking for the software sector started as a bottom-up process. In the mid-1990s, the indigenous software industry's lobby group had spotted a policy window and filled it with its policies. The state was reactive in its policymaking at this stage – effectively casting around for policy ideas to solve its chronic unemployment problem. The state was also rational in that it saw a clear cost-benefit in supporting the indigenous software industries proposals. It also met a political objective – pressure from the EU and the public to support indigenous industry. This decision was taken at Level 4 - ministerial level.

The creation of the National Software Directorate, based on these proposals from the software industry, changed the state's stance. Through this directorate, policymaking for the software sector became pro-active. It is noteworthy that the directorate was a catalyst for policy but could not, *de jure*, implement it itself. Via the directorate, the state was identifying problems and formulating solutions for the growing software sector. This was embodied in the early 1990s when, prompted by academic research, it funded Multimedia Technologies Ireland, the state's first foray into interactive media. This investment, supported by the EU, was the state's attempt to keep its software sector at the edge of technical advances. This decision was taken at Level 2, senior management in enterprise agencies.

Figure 6.1a: Map of the policymaking structure for the Irish indigenous interactive media industry 2000



Source: By author

But by the time a decision was taken in 1995 for the National Software Directorate to withdraw from active support of interactive media, this was taken at administration level, or Level 1.

In the interim at a national level, Levels 4 and 5, a contradictory policy stance was emerging. Senior officials in government departments were looking at adopting “information society” policies into Ireland. This was largely based on what was happening in North America. This could be viewed as fitting into the National Interaction and Regional Diffusion models of policy as discussed in the literature review. There was little mass public or even lobby group demand for it at the time. This government appointed commission, which reported in 1996 on proposals to develop Ireland’s “information society”, was composed of government appointed experts and some officials. While originally formed under the auspices of the Department of Enterprise, Trade and Employment, the Taoiseach’s department took the information society commission over. This was imitating an international trend to align information society policy with the prime minister, in order to both give his department a good image and secondly to demonstrate its importance within government. The commission relied heavily on commissioned reports from private consultants. Significantly, however, much of its proposals on the digital media industry were not acted upon until almost five years later. These included establishing a quarter in Dublin city centre, where a cluster of interactive media companies would locate.

The National Software Directorate was proactive through surveying and informal channels in identifying problems and suggesting solutions for the software sector. One

of its most important proactive stances was forecasting in 1995 a skills shortage for the information technology sector. It needed quantifiable, independent figures to prove this and thus commissioned an independent report from consultants. Through formal channels, through its board and then onto the Department of Education, it set-out a cost/benefit analysis of providing more information technology places in Irish tertiary-level colleges. It used informal channels, meetings between the state enterprise agencies heads and ministers, to put the problem and solution of the impending shortage onto the political agenda at Level 4, ministerial and senior departmental officials. The policy process had to go up vertically into another level of policymaking. After much lobbying by the National Software Directorate and its allies - the departments of Education and of Enterprise, Trade and Employment - the Department of Finance agreed to finance the proposal. This was on the basis of a compelling cost/benefit analysis. Once this department had agreed, cabinet approval was a formality.

The approach to policymaking seen in relation to the IT sector helped lay the groundwork for the establishment of the Expert Group on Future Skills Needs. Over time it developed a systematic policymaking method. It had eight sub-groups looking at different sectors, with interactive media being a component of information, communications and technology. Through industry surveys it forecast demand for particular skills several years ahead and then fed back this information into the state's educational and training system. This was an example of a rational, managerial style, a systematic proactive approach to policymaking. The difficulty, however, is that in a small open economy like Ireland, it can be difficult to forecast migration patterns. This makes what should be a scientific judgement into an art.

(1) Borrowing policy ideas from abroad

One of the first official reports recognising the international impact of the Internet came in 1996. That year, on the proposal of an Internet entrepreneur, the state enterprise agency Forbairt commissioned a report on the digital age and Ireland's role in it. The report's findings were not implemented. However, it did help increase the understanding of the sector and its potential amongst the state agencies.

A year later, 1997, on the basis of an idea from a policy entrepreneur, the director of a Dublin college that taught media skills, the enterprise agencies, using EU funds, commissioned a report on the development of what was then termed the digital media industry. Consultants completed the report but it lay on the shelf for over a year with no element of the state's apparatus taking responsibility for implementing its findings. This demonstrates the difficulty in taking on emerging enterprise sectors – they can fall into bureaucratic gridlock, as was discussed in the first section of this chapter. The policy recommendations of the report (Farrell Grant Sparks, 1997) were never acted upon, despite their compelling cost/benefit analysis and jobs potential. Three years later, another set of consultants would devise a similar set of recommendations for the digital media industry, called *ITS 2007* (Enterprise Ireland, 2000) that were promptly approved. The Farrell Grant Sparks' report, however, had lacked an internal or external lobby powerful enough to see its policies even reach the first rung of the implementation ladder.

It was external factors – such as the rapid diffusion of the Internet technologies - that saw the state agencies taking renewed interest in the interactive media sector in the late 1990s. Responsibility for it was given to the section of Enterprise Ireland dealing

with the audio-visual industry. It should be noted that interactive media companies continued to receive generic support from the state agencies, despite there not being a unit within Enterprise Ireland to deal specifically with them.

The agility of the Irish government's policy formation process was exemplified in two initiatives that came from Level 4, departmental level. They clearly show how the small size of Ireland's bureaucracy can be a competitive advantage. The first example was when two officials from the communications development unit of the Department of Public Enterprise tried to leapfrog their European counterparts in broadband in 2000. In early 1998, the Communications Development Section of the Department of Public Enterprise began to look seriously at improving broadband connectivity. This was based on the fact that IDA Ireland, whose Washington office was in constant contact with them, wanted to attract e-commerce companies and retain some existing ones, according to an interview with B Morrissey and J Gallagher (Appendix G). The officials began informally talking to international telecommunications companies about the cost and feasibility. They also began to look at the cost in terms of lost investment and taxation if the investment was not made and scoped the project. The project was discussed informally with telecommunications companies already operating in Ireland. The department then appointed legal, financial, economic and technical consultants to advise on the project's feasibility. The technical consultants briefly looked at high capacity satellite, infra-red and other wireless possibilities to provide adequate bandwidth but found that the telecommunications companies preferred a physical line for security, cost and quality reasons.

An ad-hoc committee of the Department of Public Enterprise, Department of Finance, Enterprise and Employment, IDA Ireland and Forfás oversaw the process. The main effect of the various consultants' reports was to act as an internal sales pitch for the project, as it needed to get sanction from the Department of Finance against competing projects. Once the Department of Finance had been convinced of its economic merit and that its expected return would be greater than the state investment, a memorandum to government setting out the proposed tender had to be approved and accepted by the cabinet. Deciding on the capacity level of the broadband connection was also difficult. The Department of Public Enterprise officials had to convince the Department of Finance that the capacity should be enough to service a European market place of almost 300m people, not only a domestic one of then just 3.6m. Ovum, the UK consultant that looked at the technical and economic aspects of the project, projected an 80% annual increase in data traffic into and out of Ireland over the relevant years (Ovum, 1999). Little reference was made to its impact on the development of the indigenous interactive media industry. Global Crossing, an American company, won the tender for the broadband in January 1999 and by July 2000, had one of two lines connecting Dublin with 24 cities in Europe and America at over 15 times the speed of existing networks but at a fraction of the cost. The Government bought half the cable's capacity for €15m (IR£12m) and sold it at just above cost to private telecommunications companies to encourage the growth of e-business. The state retained capacity itself, 16 STM-1s, and options on further capacity for use as a national resource. This was largely to provide a network to link Irish educational and research establishments directly to the American research networks. The communications development division as a result of the Telecommunications Advisory Committee recommendations also produced an E-

commerce Bill (2000) on electronic signatures and encryption. The legislation was aimed at being as liberal as possible, in order to encourage companies to establish e-commerce operations in Ireland, according to B Morrissey and J Gallagher (Appendix G).

There was broad political consensus around this strategy, which was high-risk for the state. From the initial policy inception to having the Global Crossing network working in Ireland took less than two years, such was the fast track approach. The officials can be classed as internal policy entrepreneurs. This was also an example of acute policymaking, where a problem had to be quickly addressed to retain the country's competitiveness.

(2) Fast tracking Media Lab Europe to leapfrog competition

Another example of the fast track approach was utilised when it came to the state securing the Media Lab Europe project with MIT in Massachusetts. Irish businessmen heard the difficulty MIT had in Germany with the project and due to their inside knowledge and access, they approached the Taoiseach directly with the proposal and arranged a meeting. The Taoiseach's department had to independently justify such expenditure to the Department of Finance and then cabinet. It quickly commissioned three brief reports, favourable to the project, from independent experts.

A revised proposal to the Irish government to establish Media Lab Europe, was sent to the Department of the Taoiseach on 17 February, 1999 by MIT. It offered a 10-year contract between MIT and the Irish government to establish a new, independent, not for profit, educational and research foundation. This would, the proposal stated raise

Ireland's profile as a leader and innovator in design of the world's digital future
(Media Lab Europe 1999, summary):

Media Lab Europe will provide concentration and focus for
Ireland's research and innovation in information technology and
will create a new, national synergy between business and learning

Dr Danny O'Hare, a former president of Dublin City University, confirmed on behalf of the Department of the Taoiseach that MIT Media's Lab was the leading such organisation in North America. Dr O'Hare had canvassed seven presidents or former presidents of major universities in North America to ask their opinion on MIT Media Lab. The other documents considered by the Department of Taoiseach officials were *The Irish Multimedia Industry, A Current Profile And Future Development Strategy* (Farrell Grant Sparks, 1998), Technology Foresight report on ICT (Forfás, March 1999), which recommended such a research centre and a preliminary draft of the PricewaterhouseCoopers report for Enterprise Ireland (Enterprise Ireland, 2000, Opportunities for Ireland's High Technology Internationally Traded Services (ITS) Sector to 2007). Ira Magaziner, a former senior economic advisor to President Bill Clinton and author of the Telesis report ((NESC, 1982), was engaged to assess the MIT proposal in early 1999 by the Department of the Taoiseach.

Magaziner gave an assessment of the proposal at a meeting in July 1999, attended by the head of Forfás, head of IDA Ireland, a Department of Finance assistant secretary, a Department of the Taoiseach official and Brendan Tuohy, assistant secretary in the Department of Public Enterprise. Magaziner advised that if certain conditions were met it would strategically be a good investment for the Irish state (Report of discussion with Ira Magaziner, 1999, internal document, Dept of Taoiseach). It would increase its capacity in e-commerce and software and generate spin-offs both from

graduate projects and through the access to expertise it would generate. Magaziner said: “If successful it would generate direct and indirect benefits which would be a multiple of the up-front costs indicated in the proposal” (Dept of Taoiseach, 1999). Magaziner said that the benefits would only be accrued if satisfactory arrangements for access of Irish personnel to MIT resources were agreed and MIT staff were fully committed to the Irish site. Joint fund raising of private sector finance would also have to be agreed. Skadden Arups, a Boston consultancy, was hired by the Department of the Taoiseach to examine an alternative partnership to the proposal. It reported back in October 1999 that the MIT Media Lab was the best choice for the proposed partnership (Skadden Arups [2 October 1999 to Department of Taoiseach internal e-mail communication]). Micheál Martin, the Republic’s then minister for education, however, made a representation on behalf of Irish university presidents outlying concern about giving such state assistance to an overseas research lab and was of the opinion that the state could end-up funding it indefinitely. Dermot McCarthy, an assistant secretary in the Department of Taoiseach, also raised concern that the state could end-up funding the project indefinitely if adequate corporate sponsorship did not emerge (An Taoiseach 1999 internal documents, November 1999).

Vivienne Jupp, chairperson of Ireland’s Information Society Commission, on 6 October, 1999, wrote to the Taoiseach endorsing the plans to establish a partnership with MIT. The Information Society Commission’s content advisory sub-committee, which contained a mix of top ranking civil servants and business experts like Paul McGuinness, manager of band U2 and Bill McCabe, chairman of SmartForce (now Skillsoft), then the world’s largest independent online training company, recommended speedy action to position Ireland at the centre of developments in the

global interactive content market. It recommended the establishment of a “Multimedia Town” with Media Lab Europe at its centre. (Kavangh, P, correspondence on 6 October 1999 from chair of Content Advisory Group to chair of Information Society Commission).

A physical location with sufficient bandwidth and server farms together with international and local multimedia companies and digital industries would be a major flagship project. It could be used as a source for developing the multimedia and content industries in Ireland while also attracting foreign companies wishing to establish in Europe.

The Content Advisory Group concluded that while Ireland has a large content creation industry and is developing a good educational core for teaching relevant skills, there is no visible concentration of facilities of companies. These proposals were accepted by the Department of Taoiseach and a consultation document was sent to the relevant state agencies for their submissions. This consultation document outlined the proposed agreement with MIT Media Lab and the establishment of a task force to oversee the development of a multimedia village. A memorandum of understanding was agreed with MIT Media Lab on 3 December 1999 and the project and multimedia village was announced. The Media Lab Europe funds were to come from the €612m (IR£500m) research fund established under the National Development Plan 2000 – 2006 at the instigation of the Irish Council for Science Technology and Innovation. An annual €1.27m fund to promote collaborative work between Media Lab and existing Irish third level institutions was also announced. John Callinan, a civil servant in the Department of the Taoiseach, was appointed as its acting chief operating officer, to get the project started and on 24 July, 2000, the Media Lab Europe was officially opened at the Guinness Hop Store, off Thomas Street, Dublin. A confluence of external policy entrepreneurs, official reports and the desire by senior

politicians and bureaucrats to leapfrog competing countries had fast tracked this proposal. But again, independent experts were required to endorse it.

The deal was done with MIT before other countries, particularly Britain, could open negotiations. Within 18 months of the proposal going to government, people were working in the Media Lab Europe in Dublin. In this instance, the Taoiseach effectively became the builder of the public agenda. He presented idea and solution directly. Around Media Lab Europe, the Taoiseach's office set about creating a cluster of interactive media companies.

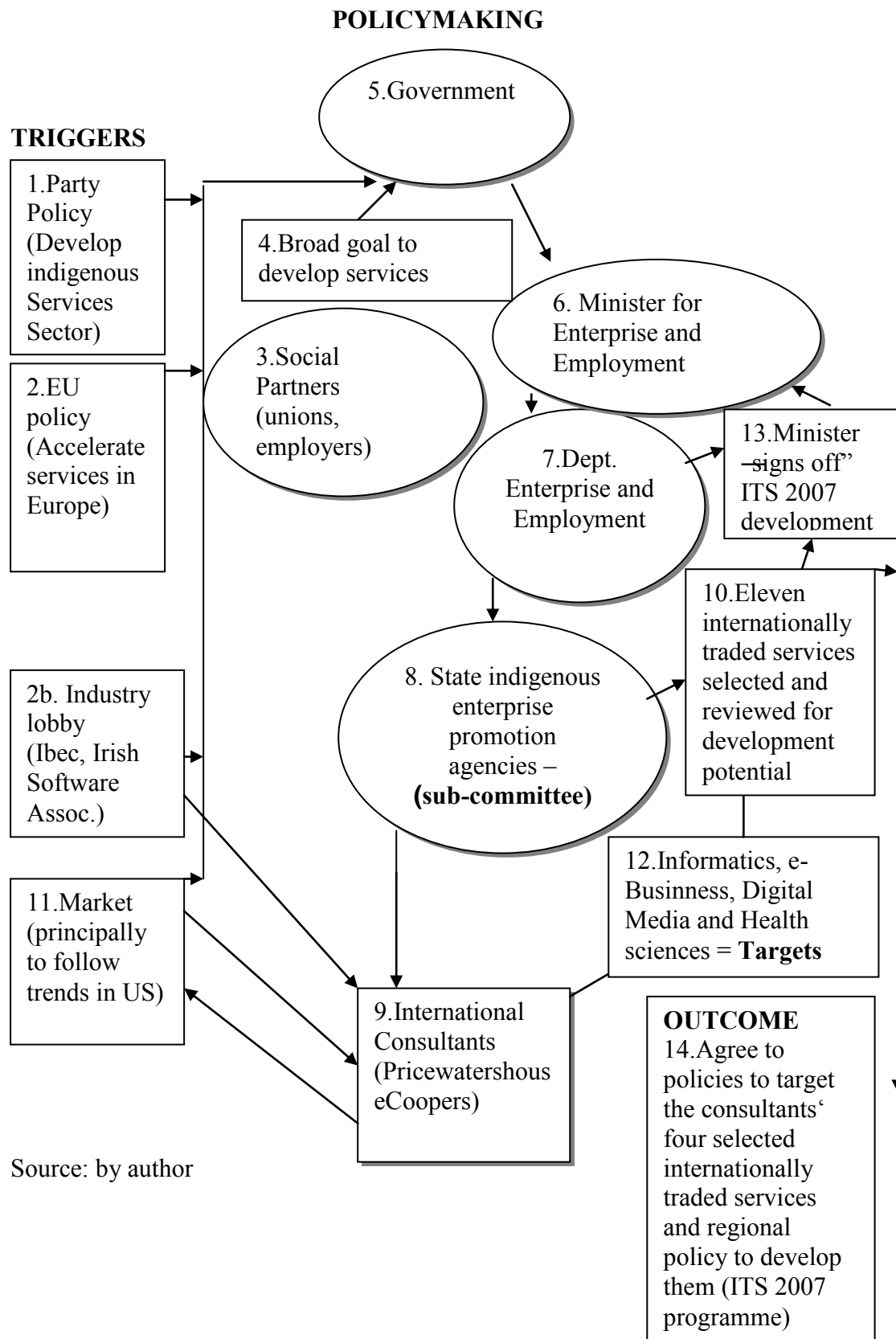
(3) Meeting demands to develop the regions and international service sector

There was growing political consensus and pressure from the European Union for a greater emphasis on two things in enterprise policy in the late 1990s. Firstly to develop Ireland's indigenous international traded services sector which was relatively weak. Secondly there was a demand to have greater regional development. The internationally traded services sector – of which interactive media was a component - was the fastest growing area of international trade.

The consensus had been established politically within the EU, social partners, industry lobby groups and enterprise agencies, for a greater focus of public policy towards the service sector. It was principally to repeat the success of America, which was generally seen as model for Ireland due to the close cultural, economic and social connections between the two states. A preliminary analysis of the internationally traded services sector was conducted in 1998 by Enterprise Ireland's international services directorate. This was basically aimed at examining how internationally traded

services could be improved. The Department of Enterprise and Employment, in accordance with EU and its minister's policy, also wanted a study undertaken on how to better develop the services sector in general, not specifically internationally traded ones. In February 1999, a 12-member steering committee of the Small Business Operational Programme, was established. Its composition is important to note as it had a key role in dictating the overall strategy and what sectors would be selected. Jennifer Condon, director of the then National Software Directorate, chaired it. She had spent most of her career in the indigenous and multinational information technology sector. The three most senior executives of Enterprise Ireland's International Services division were also on it, giving that section a strong say in the overall thrust of the study. There were two other Enterprise Ireland executives, giving the agency a majority on the committee. There was one representative each from Údarás na Gaeltachta, Shannon Development, Forfás, IDA Ireland and the Department of Enterprise and Employment. Professor Jim Walsh, a geography professor, was the only committee member from outside the state agencies or apparatus. The committee's chairperson, Jennifer Condon, had complained at the outset that the committee was overly biased towards Enterprise Ireland and wanted more industry representation but its composition was unaltered. From the outset this study was aimed at providing the one solution to two separate problems. The main objectives of the study were to identify international growth trends and opportunities within the services sector. Once found, it had to propose policies that could stimulate it. The objective was to provide strategic direction to the development of service industries. to contribute to the overall economy in terms of increased sales, exports, employment and added value. The policymaking systems used are mapped in figure 6.1 following.

Figure 6.1b: The policymaking process (1999-2000) for targeting digital media and three other sectors for development.



The attendance sheets at these meetings indicate it was generally Enterprise Ireland personnel at these meetings. Thus insiders in the policy process and those who would generally be charged with implementing it set the parameters of the study. After an EU-wide tender process, the committee sanctioned €644,000 to commission PricewaterhouseCoopers (PWC), international consultants, to conduct the study. PWC is one of the world's largest consultancy groups and has a specialist expertise in the media and technology area. It had so called "centres of excellence", mainly in America, dedicated to forecasting future trends in technology, media and other high growth areas.

At a "mobilization meeting" between the steering committee and PWC, in March 1999, the consultants produced a list of 17 (see Figure 6.2 following) internationally traded services that could be included in the study. However, as it would be too onerous to study all the sectors, it was agreed at the meeting to narrow the list. Some sectors were amalgamated and others dropped.

The criteria for inclusion on the list were sectors that were, or had, potential to be internationally traded thereby generating foreign income, or sectors in which Ireland could build a sustainable high value added position (PWC, 2000, p. 17, *ITS 2007*, draft,). The study's criteria purposely ignored other sectors such as tourism that fell into the brief of Bord Fáilte, another state agency. Retail, wholesale, personal services and transport, were also not actively considered due to their low value-added and domestic bias. Three other factors influenced the selection (PWC, 2000, p17, *ITS 2007*, Draft B, unpublished).

Figure 6.2: Initial list of internationally traded services drawn-up by PWC, March 1999, as candidates for the Irish state to target for expansion.

	Sector	Description
1	Software development and consultancy	All development plus localisation (education, banking, environment, telecoms).
2	E-commerce	Internet services.
3	Media/multimedia/new media/entertainment	Film, animation, TV, facility houses, packaged electronic and multimedia services, music
4	Life sciences	Biotech, bio med, medical devices, laboratory services, electronic information services.
5	Information and communication services and technology (incl. Electronics/telecommunications)	On-line communication and data processing services, electronic information services.
6	Back-office services	Shared services, call centres, information hubs.
7	International financial services	Non-IFSC
8	Professional services	Legal, accounting, consulting, etc.
9	Technical and consultancy services	Engineering, architecture, design, design management
10	Educational/training services	Web-based training/ technical training. Educational products
11	Agricultural services	Agricultural technologies, agricultural consulting
12	Marine services	Marine technology/consulting
13	Construction services	Project management/personnel management/ Construction/ repair.
14	Environmental services	Waste management, environmental technologies
15	Publishing services	Electronic publishing – books, magazines, music
16	Logistics management services	All aspects of logistics and supply chain management – virtual logistics.
17	Emerging service areas	Not identified

Source: PWC, (1999). ITS2007 working paper, March 1999, unpublished.

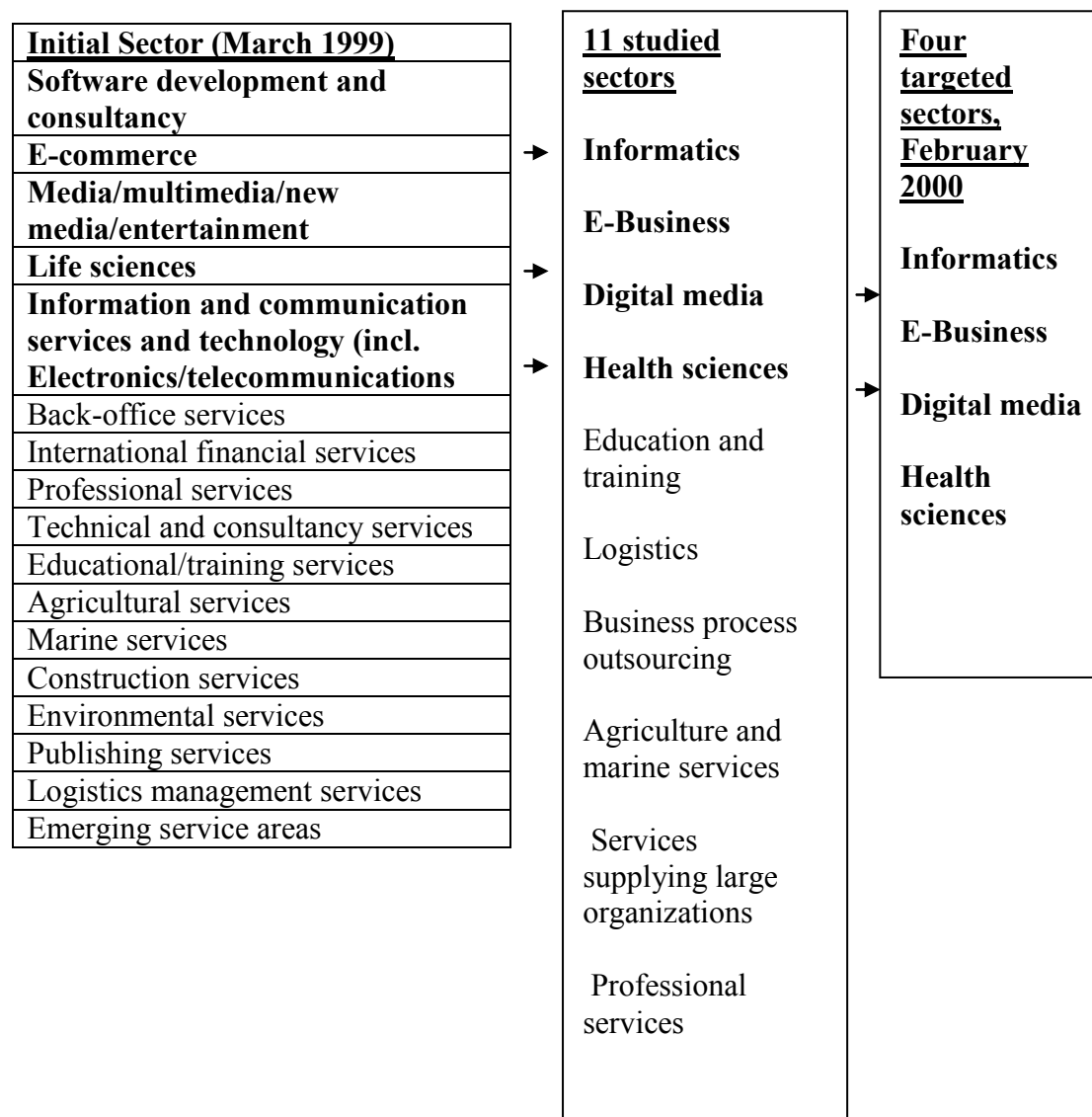
Firstly, there was a bias towards sectors already under the remit of the state enterprise promotion agencies. Thus sectors already receiving state subsidy were at an advantage over those that were not. Secondly, international trends in traded services were considered. Thirdly, the sectors representing the greatest development potential were selected. The list included information and digital media (See Figure 6.2 on previous page). Thus, it was the private consultants through their knowledge of the service sector that first identified the sectors that might be targeted. Some sectors, like waste management, were dropped at this initial stage without explanation. There was no public consultation as to what services should be on this initial list.

Another problem with this methodology is that both the consultants and steering committee were operating with imperfect information and bias, however unintentional. The likelihood is that sectors that both the consultants and committee are more familiar with would be chosen over others. Other sectors that were taking off, without state assistance or with little public attention were disregarded from the selection process. The committee and consultants at this March 1999 meeting grouped the remaining sectors under 11 headings (See figure 6.3 following). For example, electronic publishing, film, music and web services were grouped together as digital media. For each of the 11 chosen sectors, the international trends, along with its future prospects, the opportunities for Ireland (building on its current base), and the development issues that needed to be addressed, were investigated by PWC. Digital media, thus, got onto the selection criteria because it matched the criteria and was already being developed by the enterprise agencies. The methodology for the research, and those who were to be consulted, was largely drawn up by the consultants. The minutes of the Service Strategy Steering Committee meeting of 2nd

March 1999 show the presentation of the methodology was done by PWC, the consultants. They were, however, given contact details and recommendations for useful people to meet by the personnel on the steering committee. This could be viewed as an attempt by bureaucrats to stave off political criticism. Those likely to criticize its outcome were effectively brought into the decision-making process. The consultants split the study into three phases. The first was an 11-week research, consultation and analysis phase. The second was eight weeks of sectoral and regional workshops. The final three weeks were spent concluding and reporting. The study ran slightly over this timeframe but was largely completed by November 1999. The initial phase of the study was divided into two parallel operations. The first part was to build up a profile of each of the 11 sectors chosen for study.

The consultants undertook interviews with 30 officials in state enterprise bodies, mainly Enterprise Ireland's regional and international services directorate staff, and four with senior Department of Enterprise and Employment officials. The aim was to get a national perspective on each sector, views on players and views on emerging sectors and opportunities. This phase also included interviews with the chief executives of leading Irish service companies, venture capital companies and trade organizations. The trade organizations listed for consultation were the Irish Business and Employers Confederation, Irish Medical Device Association and Construction Federation of Ireland. These interviewees were asked for views on future development in their sector. They were asked to outline the barriers to locating outside of Dublin. The interviews also attempted to understand the views of those investing in seed and early-stage capital.

Figure 6.3: The process of how four sectors were selected to be targeted by the Irish state to become internationally competitive based on PricewaterhouseCoopers 1999 recommendations.



Source: PWC (1999) ITS2007, extracted from various working papers and drafts produced by the consultants during 1999.

The consultants took a broad definition of the interactive media area. For example, for the media sector, 20 interviews were conducted with the managing directors of indigenous companies or heads of trade organizations. It included film, television, music and multimedia. The output was a sub-sector profile. In some sectors, PWC only conducted one or two interviews, whereas in others, like software, it conducted

over 30. This was probably reflective of the base that was in Ireland in the particular sectors when it began its deliberations. The bigger the existing base, for instance software, the more intelligence there was indigenously about how the sector might grow. This in turn influenced the report on the prospects for that sector.

Thus, input into the policymaking process was on a selective basis from people within the industry chosen by the agencies and consultants for their perceived expertise (and availability). The interviews gave the consultants a number of ideas for possible flagship digital media projects and areas of strongest international growth or gaps. The interviewees were asked to identify opportunities in their sector and constraints to growth, and present a vision to the future of their sector. PWC then undertook consultations in America, making contact with 71 industry, academic and consultant actors mainly in Los Angeles, Silicon Valley, New York and Boston. It was not specified why America was chosen, as the original brief was to “identify the key emerging trends in services globally”, not just America. The consultants sought to categorize and describe opportunities. An example of those surveyed in the digital media area included eight PWC consultants in specialist media areas in America, ranging from broadcasting to new media. Nine media company executives were interviewed in America, including Bill Humphrey, vice president of Sony Pictures Entertainment and John Dargan of Warner Brothers. In the academic sphere in America, three interviews were conducted, including one with Dr Michael Schrabe, director of MediaLab at the Massachusetts Institute of Technology. This provided insight in the areas of technology that were taking off, future trends and opportunities from leaders in North American media.

The consultants undertook a limited amount of research into developments in research, innovation and incubator centres in the Republic. This involved desk-based research on Programmes for Advanced Technology (PATs) in post-graduate research, innovation and incubator centres. They also conducted some interviews with PAT managers and innovation/incubator centre managers. The aim was to identify clusters of technology and research to provide an understanding of developments in research.

The consultants also proposed initially looking at 26 case studies of centres set up in different parts of the world to promote principally high technology industry. The aim was to identify what strategies worked and to see if they could be incorporated into Ireland. They included, for example, Hong Kong's Cyberport, Sophia Antipolis, north west of Nice, France, International Business Hub Programme, Singapore, 55 Broad Street, New York and Invest Australia. Eleven case studies were presented to the steering committee in April 1999. Each case study write-up was less than 100 words, so the influence they had, if any, on the final strategy would seem limited. Thus policy shopping – mimicking policies working in other countries – did not feature in this policymaking process. The consultants did, however, use the perceived success of these as evidence to the benefit of clustering.

The other part of the first phase of the study was to build up a regional profile. The consultants compiled profiles on the basis of demographics, educational output, industry profile, infrastructure, strengths and weaknesses. Much of this data came from the Republic's Central Statistics Office and interviews with staff of the state enterprise development agencies in the regions. There were four different state agencies operating in the regions in addition to county enterprise boards. The

Department of Enterprise and Employment sought that these regional interviews be broadened to cover representatives from chambers of commerce and county enterprise boards. This may have been an attempt once again to curtail any future local criticism of the policy and also to extend policymaking outside of Enterprise Ireland. To widen the participation into the policymaking process, a mail survey of 200 to 300 indigenous internationally traded companies was also undertaken by the consultants. The eight-page survey was to elicit sector development opportunities and factors affecting business location. It was mainly seeking to find out why these companies had not relocated to the regions, or would not.

The next phase of the study was the consolidation of views. The regional profiles, with descriptive and statistical profiles of each region, were sent to the services steering committee in September 1999 for comment. It had already been submitted to a regional sub-committee of the committee and its comments had been incorporated. Once approved by the steering committee, these regional profiles were sent to IDA Ireland and Enterprise Ireland staff that had participated in the process for their feedback.

The consultants then drew up outline sectoral development initiatives for each region. These were then presented at regional workshops, along with the initial study. These workshops were held in Dublin, Navan, Sligo, Cork, Dundalk, Waterford, Athlone, Shannon and Galway. The selection of these regional locations seems to have been based on a geographical spread - however, there are no documented criteria. It is interesting to note that in the PWC survey of indigenous internationally traded service companies, the locations most frequently mentioned were Galway, Cork, Limerick,

Sligo, Shannon, Athlone, Newry and Belfast. This list did not correlate directly to the regional workshop locations or later proposed centers for incubation units. Newry and Belfast are in Northern Ireland and outside the jurisdiction of the Republic's development agencies.

These regional workshops were attended by personnel of state agencies in the region, staff of local tertiary level institutions and representatives of county enterprise boards (local state development agencies for micro-enterprises). Also invited were key local service sector players and financiers. They sought bottom-up views of the relative attractiveness of the region and suitability for particular opportunities. The output was a document matching opportunities to regions that was produced in December 1999 for the steering committee.

Only four of the 11 sectoral papers were produced by September 1999 - media, life sciences/healthcare, logistics and e-Business. These papers set out the global trends for the sector and profiled the indigenous sector. These papers were distributed to Enterprise Ireland staff involved in the relevant sectors for feedback. The report's first draft in December (PWC, 1999) included recommendations for all 11 sectors. Six "visioning" workshops were held. Four in Dublin for media, life sciences, eBusiness, software and ICT, one in Galway on media and one in Limerick on logistics. Galway had established a small base in media, particularly film and television. The state subsidized Irish language station, TnG4, was based in the county. Other small studios, indigenous and foreign-owned, had also sprung-up there but the size was extremely small. Compaq, the American computer hardware producer, had a large software operation in the city and also produced some multimedia material.

The idea of these sector workshops was to present some initial opportunities and recommendations devised by the consultants, identify others from the invited audience and draw-up recommendations. The thrust of these workshops was summed up by the consultants: –Brainstorming and visioning opportunities for Ireland Inc. Key success factors in positioning Ireland vis-a-vis opportunities. The output was views on emerging service opportunities and what might work for Ireland Inc.” This was what was stated in a PowerPoint presentation given in March 1999 to Services Sector Study Steering Group. Personnel of state agencies involved in relevant sector, relevant staff of local tertiary level institutions and key individuals within the relevant sector attended these. The original plan was to also include key successful entrepreneurs, both providers and users of the services, representative organizations and international and local panels of experts, but not all these could be organized. In the case of media, although the emphasis was on digital media, those from traditional media sectors were also invited to these workshops. This was largely because of the potential for future convergence. The steering committee proposed people for each workshop. The other six initially targeted sectors – shared services, education and training, professional services, services supply manufacturing and agriculture/marine, were not included in designated workshops as had been in the original plan. Interviews with key actors were scheduled instead but did not take place.

Following these workshops the first draft of the final report, including the recommendations, was delivered to the steering committee in November 1999. PricewaterhouseCooper consultants identified in their report many areas of opportunity for Ireland’s digital media sector (Enterprise Ireland 2000, pp. 61-63).

These were arrived at mainly from interviews with experts in America and Ireland. Many of the opportunities in interactive digital media, unlike other more mature sectors, where some time in the future and the report was ambiguous in when, if ever, they might be realized. This, the report stated, was due to the state of flux of the industry. The report identified some broad areas of opportunity, all of which were already known to the industry. The consultants took a very broad view of what would encompass the digital media sector, comprising film, television and radio production and post-production, animation, special effects, music and advertising and multimedia. There were opportunities for computer-based animation and visual effects in the games market, digital asset management, digital cinema, digital music distribution, DVD localization, data mining services for advertisers and more media-rich content services over the Internet. The consultants stated that Irish media companies would have to produce higher quality content at lower cost. This would involve changing existing business models (Enterprise Ireland 2000, p. 64). Better skills training was required in computer based animation, advanced web audio/video streaming, 3-D, simulation, imaging and multimedia software applications. Television production companies needed to develop better digital production skills or align themselves with others possessing these.

The steering committee raised several concerns on these drafts, which had both strategic and political implications. The first was the location of the proposed ~~technology portals~~, ‘_Webworks’ [incubation units]. This was contained in the minutes of Services Steering Sector Study Steering Group (30 Nov 1999), released under Freedom of Information by Department of Enterprise and Employment. Another was that many of the recommendations were overlapping with existing

policy, for example, the R&D strategy was similar to that proposed by the Technology Foresight programme. There was also a need to provide justification of sub-sectors chosen and address whether or how to deal with the rest of the services sector.

The Department of Enterprise and Employment, whose budget would effectively fund the strategy, also raised a number of issues about this draft of the recommendations. Paul Cullen, principal officer of the department's competitiveness and indigenous enterprise section, outlined points with the committee's chairperson that the department wished to have clarified before the study was finished. Cullen's first concern was that the choice of the 11 targeted sectors had to be justified in respect to their preferment over the rest of the sector, which had the potential to cause political problems and he was safeguarding against this. His second major concern was the financial and human resources required to implement the strategy.

On this basis, the consultants provided a revised draft for the steering committee's meeting in January 2002. Comments were also requested from the Department of Enterprise and Employment at this stage. This indicates the close relationship between consultants and bureaucrats in the policymaking process. Bureaucrats have more of an input into the consultant's reports than is generally perceived. The request also ensured that proposals were acceptable to officials and politicians before they were made formally.

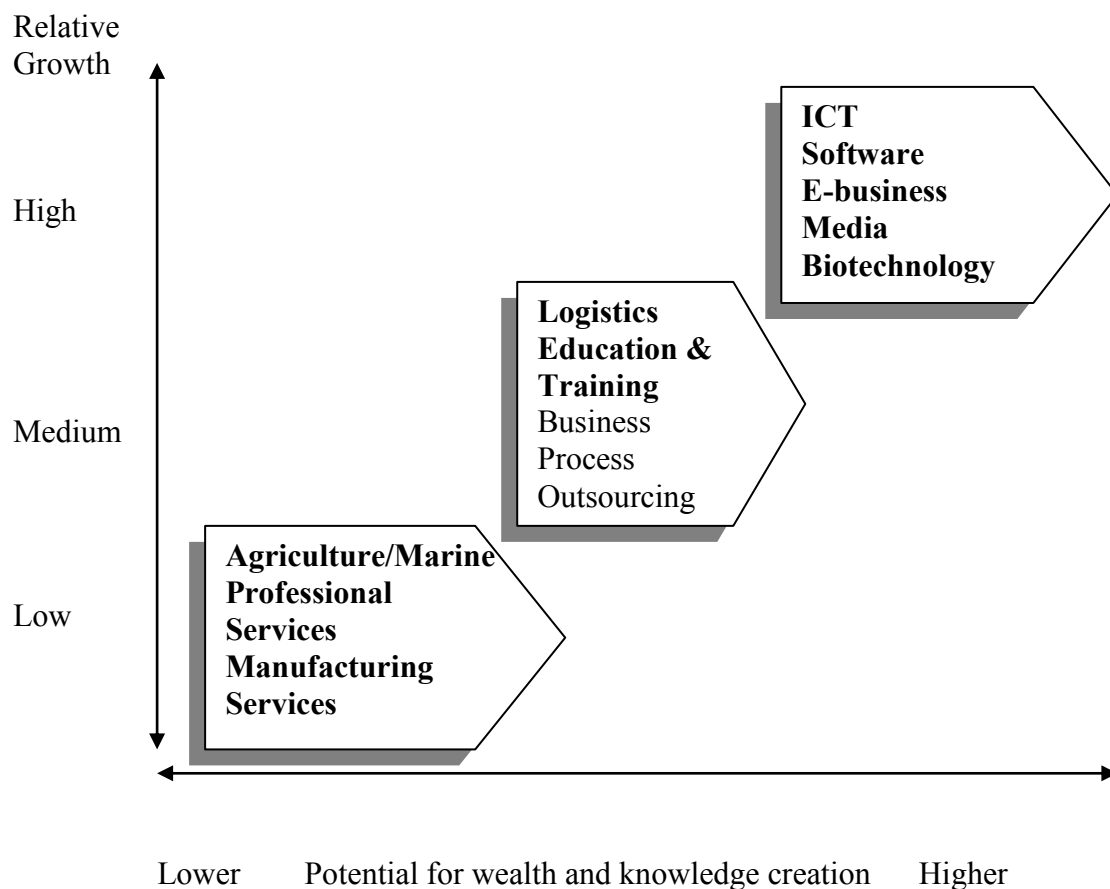
This revised December 1999 draft classified the growth and value added potential of the 11-targeted sectors. To fund any plan, there had to be a quantifiable cost benefit

analysis. This chart was critical in deciding which sectors to drop and which to target. ICT, software, eBusiness, media and biotechnology were classed as higher in potential for wealth and knowledge creation and relative growth (see figure 6.4 following). Logistics, education and training and business process outsourcing were classed as medium. Lower growth was forecast for agriculture and marine, professional services and manufacturing services. But, the consultants stated, it was very difficult with such dynamic sectors with few reliable statistics, to give precise forecasts (PWC 1999, ITS2007 December 1999 draft, p.2, unpublished):

Quantification of the size of the prize is fraught with difficulties as accurate data is simply not available in relation to the current size of the internationally traded service sector (other than software). In addition because of the evolving nature of some of the sectors, such as eBusiness and new media, sizing the scale of the opportunities is challenging. Nevertheless, based on the informed view of the development agencies and the research undertaken....an approximation of the current size of the sector is outlined. In addition, a quantification of the potential for growth by 2007 has also been attempted.

The only sector with reliable statistics was software. The consultants produced a figure of €1.3bn (IR£1.1bn) as a sales baseline for internationally traded services from Ireland in 1998. This was based on estimates from four sources, mainly state enterprise promotion agencies, whose accuracy was untested. By breaking down the component of this sales and export figure that represents media, it becomes clear how unreliable these figures are. The baseline figure for the media industry in 1998 was €194m (IR£153m). This was based on a €152m (£120m) value of the film industry, which was accurate.

**Figure 6.4: PWC 1999 Chart of Sector Development Potential
used to choose sectors for targeting by the Irish state.**

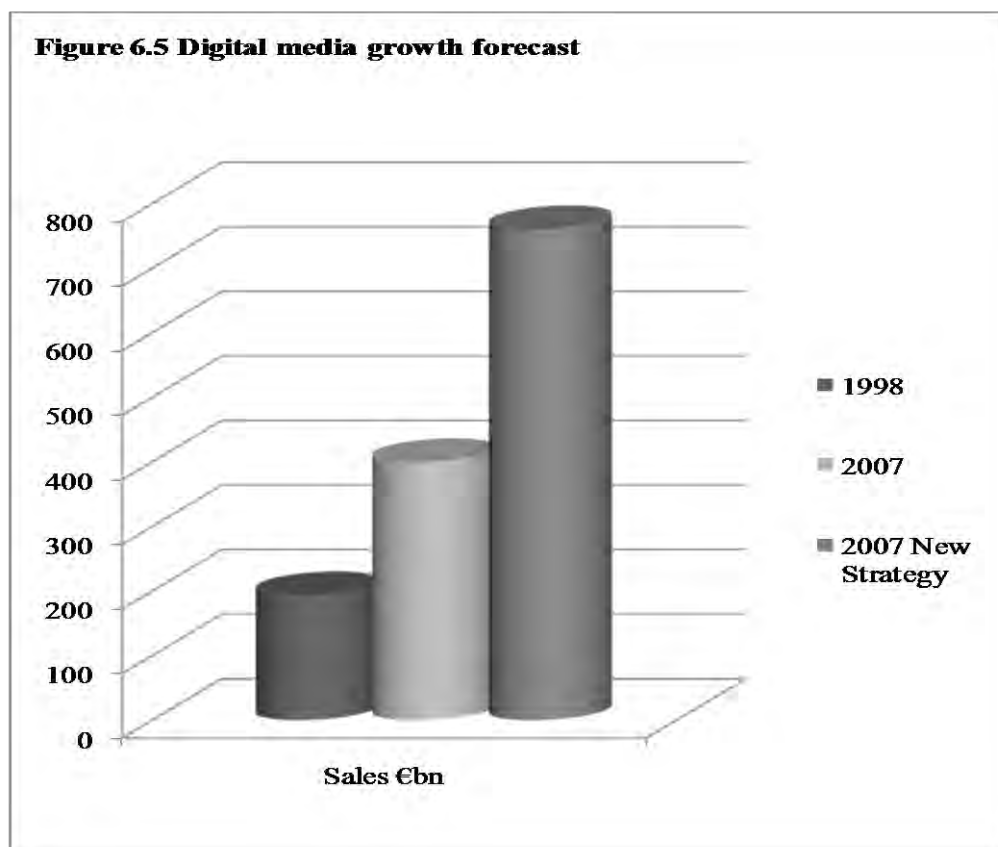


Source: Adopted from PWC Draft B, p 1. The Strategic Development of Internationally Traded Service Industries throughout Ireland.

An estimate of €42m (£33m) was then added to this figure for other types of media exports, which was based on estimates from the state agencies. The growth in interactive digital media, without implementing the PWC recommendations, was forecast at €500m (IR£400m) by 2007.

But if the PWC recommendations were implemented, media would grow to €761m (IR£600m) (see figure 6.5 following). These figures are extracted from a presentation given by members of the services sub-committee to the executive committee of

Enterprise Ireland in February 2002. Thus the state targeting strategy, the consultants forecast, would mean that the already robust forecast growth for media would be almost doubled. No figures, however, were included in the report to show how this forecast figure was calculated. The indicative total cost of implementing the strategy was forecast at €283m (IR£223m). This was split almost evenly between the cost of technology exploitation and building and running the regional technology incubators. However, no figures were produced in the study to show clearly from where these costs arose or indicate their accuracy. The study forecast, that if its strategy was implemented, it would increase exports by €2.28bn (IR£1.8bn) and create 8,500 additional jobs. Thus, for the state, there appeared to be a compelling cost/benefit case in the strategy. This revised draft was then presented to Enterprise Ireland's executive



Source: Adopted from the PWC Draft B, p 1. The Strategic Development of Internationally Trades Service Industries throughout Ireland

committee for its imprimatur. Significantly, only four sectors were included in the revised version – those that had been assessed for the highest growth - ICT, software (re-classified together as informatics), eBusiness, media and biotechnology. Four of these sectors were prioritized as offering significant high growth and high opportunity for Ireland. There had been no set place in the process for interested parties in other sub-sectors, for example those excluded, to argue for inclusion as a targeted sector. The process was conducted behind closed doors. No proposals were presented on the other six sectors or reasons given for their exclusion. For each of the initial 11 selected sectors (before this was curtailed to four) a capability chain was examined with the areas requiring attention rated according to their importance for the sector's development. The capability was ranked under nine headings (see tables 6.1 and 6.2 following). These capability tables (6.1 and 6.2 following) clearly demonstrate that of the four highest growth potential areas, interactive digital media, was the one requiring the greatest amount of capacity building. In all sectors, from research to education, in access to finance and enterprise facilities, capability was severely lacking. The best existing capability was in software and ICT, however, the table also shows there was very good capability in education and training. It was not chosen, as part of Enterprise Ireland's *ITS 2007* strategy, because its growth potential was modest relative to the other targeted sectors. Thus it is possible that those in these excluded sectors could have made a justifiable argument for their inclusion in the targeting and the exclusion of digital media. The proposed services strategy had to be endorsed by a number of other agencies in the state's enterprise promotion apparatus. However, this was more like moral support than any requirement to legitimize the policy.

Table 6.1: Capability chain of sectors of high growth potential

Research and development			Education			Enterprise Development			
Sectors	Research	Tech transfer	Primary Secondary Tertiary	In-service training	NPI	Access to Finance	Marketing	Flexible Office Facilities	Telecom Bandwidth needs
ICT									
Software									
EBusiness									
Digital Media**									
Biotech									

Table 6.2: Sectors of moderate growth – capability chain.

Sectors	Research	Tech transfer	Primary Secondary Tertiary	In-service training	NPI	Access to Finance	Marketing	Flexible Office facilities	Telecom Bandwidth needs
Logistics									
Education Training									
Business Process									

Key to tables

	Critical
	Very important
	Important
	Needs more attention

Source: Extracted from PWC, December 1999, Draft 1, pp. 31-33, The Strategic Development of Internationally Traded Service Industries throughout Ireland, unpublished.

** Digital media content and applications.

Enterprise Ireland did not in reality require this endorsement from its sister agencies as it would be the agency implementing most of the recommendations. The February 2000 presentation to the Enterprise Ireland executive committee outlined from where the “support and active commitment” to the proposed strategy was going to be sought by the steering group. The list included the Enterprise Ireland board and management, the Minister for Enterprise and Employment, the department, Forfás management group, Shannon Development, Údarás na Gaeltachta and the Irish Business and Employers Services Council. Thus in the early months of 2000, there were presentations and discussions with these parties about the proposed strategy. It seems they changed the proposals very little.

In February 2000 the strategy received outline approval from the executive committee of Enterprise Ireland, which is made up of its chief executive and directors of each of its main divisions. The proposal then went to the full board of Enterprise Ireland, made up of government appointed directors, who were mainly non-executive. An *ITS 2007* steering committee, to implement the strategy, was formed in April 2000. At its first meeting it made some political changes to the consultant’s proposals. Peter Coyle, Enterprise Ireland’s executive director responsible for developing the internationally traded services sector, chaired this seven-member committee. There were three other Enterprise Ireland representatives, one from Forfás, one from Shannon Development, one from IBEC Services Council and one from the Department of Enterprise and Employment. It was established to implement the measures on services.

The committee made two changes to the consultant's initial (December 1999) draft. The latter consultants had proposed large technology ~~portals~~" in Galway, Limerick and Cork. The smaller ~~Webworks~~" could be located in regional towns such as Sligo, Castlebar, Athlone, Tralee, Ennis and Waterford. However, this could create political problems, as the cities would be seen to be getting an advantage over larger regional towns. For this reason the committee changed all the titles of the proposed incubator centres to ~~Webworks~~" to avoid class distinctions.

There was debate too as to the criteria for selection of the towns and cities where the ~~Webworks~~" incubators would be located. It was agreed to only site the ~~Webworks~~" in locations that already had an institute of technology, a tertiary level college (ITS Steering Committee 2000. Minutes, 19 April 2000, unpublished).

A linkage between Webworks and third level institutions would be a positive and defensible step. This would see Ennis excluded and Thurles included.

However, the then state telecom company, Eircom, had designated Ennis, Co Clare as Ireland's Information Town in the late 1990s. This was a pilot scheme to significantly increase the amount of computers and high band access to the town to see the trends that would emerge. Its proposed exclusion, in favour of Thurles, was to provide a political defence on the location of the ~~Webworks~~" incubators. For most of the towns selected, the reason was not to do with building on existing bases, but instead based on a political will to have regional dispersion. Thus, the strategy, while based on regional dispersion was placing more development in towns already provided with facilities. Rational policymaking was giving way to political expediency. As such, it was clear that senior civil servants had the political acumen to ensure that policy recommendations were acceptable politically or at best politically neutral.

The committee prioritized a ~~major~~ digital media drive” based mainly in Dublin where there was already a base. It proposed, however, that the sector be targeted in other places as well (ITS Steering Committee 2000, minutes, 19 April 2000, unpublished). Six sub-committees were established to oversee the Webworks projects, eBusiness learning centre, technology exploitation, Digital Hub, Dublin, international market initiative and the tertiary level agenda and European digital media training institute proposal. Enterprise Ireland personnel dominated these sub-committees and it was not intended that they be representative of each sector chosen. Shannon Development was to join some of these implementation committees and IBEC, the employers lobby group, was to recommend some business people. This compromise was after some lobbying by the IBEC representative on the steering committee.

The strategy was not launched until a ~~sign-off~~” from the Minister for Enterprise and Employment in May 2000. This was a quote contained in minute of *ITS 2007* Steering Committee, 18 April 2000. Donal Denham, a senior official in the Department of Enterprise and Employment, claimed the steering committee did not endorse the final document. His contention too was that it was originally not intended just to focus on internationally traded services. However, despite these bureaucratic misgivings, the plan went to Level 5. In May 2000, the summary of the plan was sent to Mary Harney, the then Minister for Enterprise and Employment, at her request. It is unclear from correspondence between the minister and Enterprise Ireland whether her approval, as such, was being requested. She was invited to discuss the ~~proposed~~ set of initiatives for development of internationally traded services”. This was contained in a letter from Peter Coyle, Enterprise Ireland director, to Mary Harney on 3 May 2000. Minutes of the *ITS 2007* steering committee meeting of 19 April 2000, indicate

that Enterprise Ireland was unwilling to start implementing the plan without the minister's endorsement. The *ITS 2007* strategy was planned for publication later in the month that it was sent to the minister, so it is clear that the minister could have little practical input into it.

The policy was effectively being written by Enterprise Ireland, the agency which, in turn, would be charged with implementing it. Mary Harney, the then Minister for Enterprise and Employment, endorsed and launched the plan in late May 2000. Thus the legitimacy of policymaking is not always clear even within the system. Time constraints can lead to confusion as to what stage policy is approved. Policymaking effectively happens through ongoing negotiation between bureaucrats, consultants and politicians within a formal structure.

In analysing the sequence of events in formulating this policy for the service sector, it is clear that a number of the PWC proposals contradicted their own findings about the factors that would help the interactive digital media sector to grow. For instance, the recommendations make much of the international experience that clusters help make digital media internationally competitive. Yet, they argued for taking much of it outside of Dublin, where most clusters were already formed. It admits, elsewhere in the report, that this policy of trying to create new clusters will lead to higher failure rate. The consultants, could too, have looked at clustering in one or two major centres like the International Financial Services Centre, but instead proposed spreading the development within over eight centres which were purposely distant from each other.

This demonstrates the difficulty in public policymaking where rational business choices have to be compromised for political reasons. This dispersal met the political objective of dispersed development. These factors also show that the contents of consultant's final report were not ~~independent~~ recommendations, as it might be ~~sold~~ to the public. The consultant's recommendations had, effectively, been already approved by their overseeing bureaucrats and made to fit a political requirement. Elements of controversy in the consultant's proposals were removed or made politically defensible. In any case, the recommendations could be distanced from the bureaucracy and political process should they fail or create political controversy. Their recommendations were strongly influenced by the enterprise agencies, experts from America and officials in Enterprise and Employment.

(4) Forfás enters into digital media development domain

It was significant that interactive/digital media was one of the first sectors it choose to focus Ireland's enterprise policy on. Forfás wanted to build on the *ITS 2007* report by formulating a more detailed policy strategy for the digital media industry. This again was largely of its initiative with little industry pressure. Again, PricewaterhouseCoopers secured the contract after a tender to produce the study and policy recommendations. This study looked closely at three elements: a) The policymaking structure and policies of rival jurisdictions to Ireland in the digital media sector. b) Case studies and quantitative data on the structure of the indigenous digital media industry. c) Interviews with industry experts particularly in New York and California where they gave projections as to the future direction of the industry.

The findings from these studies were placed before a forum and workshop of invited experts who ran a range of digital media businesses, policymakers from across government departments, state enterprise promotion agencies and academics researching in the field.

Forfás checked drafts of this report before its board accepted its overall policy recommendations. Thus again, the state was taking a proactive analogous approach to ensure a targeted sector would develop in a specific direction. Those involved in producing the policy were consultants expert in the area of digital media. They understood, mainly from research as opposed to practical experience, the factors conditions that made companies in the sector internationally competitive. Again their report was largely modelled on the North American experience.

Outside of formal project committees or workshops, executives from the interactive digital media industry did have direct input into Level 4 decision-making. This was because the state had purposefully appointed them to committees or boards that fed into the state policymaking network. Senior executives of two of the case study companies were on state committees feeding into policy. Most of the larger case study companies were also surveyed on at least three occasions for each of the major reports into the sector, which were fed into Levels 2 and 3 of policymaking. The interactive digital media industry was weak in articulating its needs to government, so the government, via consultants and expert committees, figured out the problems and formulated and implemented solutions for its own political ends.

In addition, Enterprise Ireland and its predecessor, Forbairt, also surveyed annually those companies who were its clients, feeding the results into Level 1 and 2 policymaking. But it was not one-way traffic. Enterprise Ireland was one of the main financiers of the indigenous interactive digital media sector. Its officials had good working relationships with many companies and could see what worked for the sector and international trends. They were able to diffuse useful advice on markets, company structure and other elements that affected a company's policies. This learning by doing also helped in informal policymaking.

To summarise, during the policy formation and legitimisation stage of this case study the following points become clear. The theoretical basis for much of policy was to strengthen the “diamond” of factor conditions that would make the interactive digital media industry internationally competitive. This is derived from Porter (1990) and Magaziner (NESC, 1982). It is similar to the Japanese market orientated planning approach. The discipline is effectively that of implementing a business strategy to defined targeted sectors. By 2000 Forfás, the industrial policy advisory agency to the enterprise minister, had taken on a role similar to that of MITI, the Japanese ministry of industry and international trade. But Forfás had less authority to implement its plans. Its focus on policy formation was to respond to the factors that influenced the competitiveness of targeted industries at particular stages of the business lifecycle. Forfás was gathering intelligence on sectors and formulating strategy for the industry's development. It did this formally – through industry workshops, reports, expert committees, surveys and informally through contacts with industry actors. It then tried to fashion policies to help these designated sectors grow. The

implementation of its policies for indigenous industry was principally through Enterprise Ireland.

The influence of significant overseas businesses with operations in the Republic over policy formation was also important. Their influence directed at Level 4, ministerial level, was shown in the main case study. Their importance to the Irish economy in terms of tax, employment and role models for attracting other companies, gave them almost direct ministerial access and direct input into policy formation. It was pressure from the TNC software companies in Ireland, coupled with EU directives, which led to the introduction into Ireland in 2000 of one of Europe's most strict Copyright and Related Rights' pieces of legislation. During the drafting phase, the TNCs lawyers were given drafts of legislation and their comments on them led to amendments. They were effectively insiders in the policy formation process.

The second piece of evidence of this level of accesses during policy formation was the government's broadband investment policy. Microsoft, the world's largest software company, had meetings in Dublin and Seattle both with Irish ministers and officials. Here they outlined their requirements and specifications for upgraded broadband and data hosting facilities in Dublin. The Irish government fast tracked its decision to underwrite an enhanced broadband network. Microsoft reciprocated by locating in Dublin the next generation of its products for the European, Middle East and Africa markets, using the proposed broadband infrastructure.

The American importance to policy formation was also evident from the impact that the Telecommunications Advisory Committees first and second reports had. This

committee was composed of mainly American telecommunications experts but senior departmental officials also attended its meetings. The committee did invite submissions from interested parties but the majority of its recommendations were based upon consensus amongst the committee members.

The committee member's ability within the structure to make public policy was determined too. Effectively it depended on where the proposals were coming from. The higher into the system – for instance at Level 4 or Level 5 – the greater their chances of adoption. Public policymaking for the sector was initially developed vertically. However, from 1996 to 2000, it was developed horizontally with several state agencies, from IDA Ireland to the Department of the Taoiseach, co-ordinating together, or in some instances acting separately to develop policy. But between 2000 and 2004, it reverted back to vertical policymaking with Forfás taking control. It was, however, not the haphazard policymaking that had been witnessed for the sector at the beginning of the 1990s. It was systematic proactive policymaking. Forfás was taking policy inputs from the industry, IDA Ireland and Enterprise Ireland. Government departments had largely stopped making policy in the area. Forfás would then pass back its policy recommendations to IDA Ireland and Enterprise Ireland for implementation.

The governmental apparatus for policymaking varied depending on what the problem was. Any proposal involving substantial public expenditure required an independent cost/benefit analysis from outside consultants. This was to allow rational decision making. The proposal also needed to pass through several stages of bureaucracy – typically Levels 3 and 4 – before getting approval at governmental Level 5. The

actual formation included intense research – normally subcontracted to private consultants and subjected to a review by a committee of bureaucrats. Options were not always put for selection to government actors. Instead, politically savvy civil servants ensured that all decisions were politically defensible before getting to a ministerial stage for approval. There was little evidence of internal and external bargaining and compromise before implementation. However, it should be noted that cabinet papers have a period of exclusion from release under Freedom of Information, which was extended in 2000, thus this study could not see if there was cabinet dissent on any proposal.

The methods Irish policymakers used for programme formulation varied. Mostly it was segmental. It dealt with specific issues as they arose. Commissioning a consultant's report or appointing an expert committee was the solution used to address most policy problems. Initial policy was proactive – getting into interactive digital media at an early stage. However, by the late 1990s it was reactive – simply trying to keep pace with competitor countries. From 2002 onwards it became largely proactive again – trying to leapfrog competitor countries.

While in principle those at the peak of the political hierarchy - Level 5 - have formal or de jure decision-making authority, in effect, all they did was approve the proposals offered to them by their senior bureaucrats. These had in turn simply made political defensible solutions proposed by professional expert advisers. The increasingly complex nature of policymaking was leading to greater demand for professional experts to work with the bureaucracy. This, however, tended to obscure responsibility. The administrators were contracting the responsibility for decision making to

consultancies. The cost effectiveness was a key concern for approval of almost all projects. The principle device used in assessing projects was the cost-benefit analysis. This analysis is based on hard information, preferably quantifiable. In cost benefit analysis, the information and mathematical calculations combine to produce the best decision. However, as experience afterwards proved, figures used for various projections were often very dubious. It is clear that defining policy objectives was difficult and very often unclear. The governmental policymaking apparatus for interactive digital media rarely had clear and precisely refined goals.

The tempo of policymaking changed at different periods. There was acute policymaking following the public disclosure of Microsoft's difficulties with Irish bandwidth. However, this followed a period of incubated policymaking over a period of years where support for the idea of developing the interactive digital media sector was building slowly. During this period, the Government ignored several reports. As can be seen, most of the policy formation was analogous – it simply examined what was done to treat a problem judged to be similar to the present problem in Ireland or another jurisdiction. There was little, if any, creative formulation where an effort was made to develop imaginative proposals suited to the characteristics of the problem.

Policy implementation stage

Public policies are commitments to do something. They do not institute movement as much as they direct it. There is some evidence from the case study that there was often a gap between the passage of a policy and activity on the ground. But other times policies were fast-tracked and implemented if they had enough administration and political support. It is clearly evident from the case study that policies proposed

by policy entrepreneurs, both internal and external, at ministerial level, had a significantly higher chance of implementation than those at lower levels. These horizontal policy proposals and policymaking had better implementation success than vertical and there were less instances of vertical policy proposals succeeding. The translation into practice of the policy that emerged from the policymaking process is beyond the scope of this study. It would be wrong to assume, however, that what is decided is implemented and does not have unintended side effects which can affect policymaking.

Policy evaluation

Evaluation of existing policies pursued by Enterprise Ireland and the government was done on a formal annual basis by a self-filling survey posted to all companies that benefited from the state enterprise development agency's services. The interactive digital media sector was included in this survey. It produced quantitative and qualitative data. The quantitative data gave the sales, exports and areas exporting to of each targeted sector.

This data was useful for comparing the Irish sector with that in competitor countries to ensure that the sector is keeping pace with the marketplace. The qualitative data also allowed the companies, usually a senior management person, to comment on policy. The results of these surveys were aggregated and presented both to Enterprise Ireland's executive committee and then its board for action. It is unclear from this study how much this actually fed into policymaking, but the survey was taken seriously. It was clear from the case studies companies that there were some minor methodological problems with this survey.

Firstly, the entire population of interactive digital media companies was not surveyed; only those who were clients of the agency. These did, however, include most significant interactive digital media companies but excluded generally those with under 10 employees and concentrated on the domestic market. The second potential problem that emerged from the case studies was that some companies never returned the survey. The response rate to the survey was good at around 52%. The third problem is how valid the response was. Company executives were unlikely to be too critical of Enterprise Ireland policy as they were reliant at the time or in the future on it for financial assistance. Nevertheless it was a valuable exercise and effectively completed the policymaking loop. To overcome similar methodological problems IDA Ireland sub-contracted an independent market research agency to undertake its annual survey of its client companies. A random sample of companies was taken and the feedback was anonymous and aggregated. The evidence is that this provides a more frank and thus useful form of feedback. The other form of evaluation of policy, which proved useful, was the industry surveys and interviews conducted by the consultants employed by state agencies when researching their various reports on the sector. Company executives tended to be more open with them than the agencies directly. The consultants' reports implicitly gave feedback on policy, but rarely criticised it, principally because it was a) not in their brief to do so and b) diplomatically it would be unwise as they were unlikely to be too critical of agencies paying for the research.

Forums for industry representatives where they could discuss policy issues were held on three occasions during the period of this study. Forfás also held occasional workshops to tease out policy issues. At these meetings, a random selection of those

running interactive digital media companies was invited to meet officials in an informal, frank manner. Forfás did not have direct grant giving authority so companies could speak more freely. These meetings were often held on Saturday mornings in the city centre where company executives would have time to think upon issues. Benchmarking Irish policies and policymaking processes against other competitor states did take place twice over the period of this study, when consultants were both researching a new report on the sector and “shopping” for ideas.

The other formal evaluation method was the representation on the board and sub-committees of the Information Society Commission of key industry figures. This included the chief executives of what were then two of the most successful indigenous interactive digital media companies. This meant at the policy formation stage and final policy proposal stage, improvements to existing policies could be suggested. There was a similar representation from an academic with experience in interactive digital media on the boards of the skills and science councils. The importance of the informal evaluation should not be underestimated. Officials from the state enterprise agencies tend to meet on a daily basis companies in the sectors that they service. They get to meet a wide range of companies in the sector and build-up good industry knowledge. They also attend trade shows and conferences related to the sector. These all provide important informal feedback that is fed into the policymaking process.

Self-evaluation or learning by doing is also another important part of evaluation used by officials. They learn from their work in the field what policies are succeeding and those failing. Those within the state enterprise agencies tend to remain in the same

role for long periods of time and build up a historical reservoir of policy actions that work. In addition to this, outsiders from industry are also brought in to head-up directorates and bring industry thinking to problems in their sector. This has the double effect of giving the state enterprise agency respect amongst the industry. Apart from Forfás, which monitored the work of Enterprise Ireland, there was no independent evaluation of the policies for interactive digital media built into the policymaking mechanism. There was a five-year statutory review of industry policy by the Department of Enterprise, Trade and Employment. This was very much on broad policy rather than specific targeted sectors.

Conclusion

The case of Ireland's indigenous interactive digital media industry provided an interesting example of new methods of policymaking that were emerging in Ireland. The case showed that while some actors boasted that they followed no method but were just "strategic future grabbers" the reality was somewhat different. The state had an aggressive approach to securing its economic future by carefully selecting a few enterprise sectors that a) had potential for exceptional international growth and profitability and b) Ireland had, or could develop strengths in these areas and capture a large share of a global niche.

It was a proactive, highly selective, expert-led and internationally looking approach. The underlying philosophy adopted for this policymaking was largely based on Porter's diamond model (Porter, 1990) of continually improving the factor conditions for these selected sectors. The aim was to enable companies in these sectors to become internationally competitive by creating clusters of excellence in these global

niches in Ireland. The policy involved significant intelligence gathering at several levels both internationally and domestically. An element of this was watching closely the competition and trying to “leapfrog” them in terms of infrastructure and factors that contribute to competitive advantage.

It had many of the characteristics of the policymaking model Japan followed in its post World War II industrial development but differed from it. The policymaking structure emerged from Ireland’s relative success in developing an indigenous software sector during the 1980s and 1990s using a specialised unit, the National Software Directorate. It contrasts with the protectionist isolationist policymaking up to the 1950s, foreign-led development up to the 1960-80s and unselective approach toward indigenous industry up to the mid-1990s.

There were four changes of government over the 10 year period of the study. The Progressive Democrats, a small party close to business interests was a minority coalition partner in two of these governments. The party instituted various changes in generic enterprise policy when in power, reflecting the concerns of its main support base. This included instituting a change in 1999 in the institutional structure of the enterprise development agencies. This was an effort to reduce their bureaucracy and increase their effectiveness by offering companies a “one stop shop” for state support services. The changes in government, did not, however, change government policy towards digital media. The impetus in 1999 to develop a strategy to stimulate the growth of Ireland’s indigenous internationally traded services sector came largely from the European Union. It was co-financing the Republic’s national development plan. While there were trade union and opposition demands for such a strategy, it is unlikely that they would have succeeded in getting the strategy in place.

The government was spurred to introduce programmes in broadband, internationally traded services and copyright, due largely to pressure from vested interests based outside the state. Some actors within the state's apparatus were generally supportive of these policies advocated from outside. The state's interest in the indigenous digital media sector was not related, per se, to lobbying by the sector. It was a result of a re-alignment of enterprise policy towards internationally traded services, into which interactive media conveniently fitted.

There was general consensus within the advocacy coalition for state support of digital media, so conflict generally did not arise. There was learning by the state enterprise development agencies and Department of Enterprise, Trade and Employment as to what policies work and do not throughout the period of the study. Successful pilot schemes were developed into new initiatives. Consultants, conferences and programmes used in different countries also helped to diffuse knowledge about what worked and did not in terms of policy for the digital media sector. All policy initiatives concerning interactive media, which were going to incur a cost to implement, had generally to be passed by the Department of Finance. To get sanction at this level, the initiatives needed to be accompanied by independent cost/benefit analysis, usually from outside consultants. Significantly, the only initiative that did not have a precise cost/benefit analysis was the proposal from the Department of An Taoiseach to finance Media Lab Europe. It did, however, have three outside consultants recommending it as a strategic investment.

While consultants gave quantitative forecasts for many policy initiatives, even they stated that it was not an exact art. Making policy and getting agreement was easier in

relation to the digital media industry than perhaps in other sectors of society because it did, despite this shortcoming, lend itself to cost/benefit analysis. This was clear in the selection in late 1999 of the four sectors to target for international growth by the consultants and their overseeing committee, comprised mainly of Enterprise Ireland officials. They simply charted the growth potential of 11 sectors and chose the four with the highest growth potential and their existing capacity in Ireland. Such rational policymaking would be difficult in the social sciences.

In terms of evaluation of policy, at least five workshops and forums were held relating to the digital media sector during the period of the study. They were all instigated or financially supported by the state. The exchange of views at these workshops between professionals in the sector did help in refining policy and letting others understand policy lines being taken. There was, in some cases, much criticism levelled at officials who were in attendance over policymaking and non-implementation. The implications of the analysis of this case study and how it relates to existing literature, as set out in Chapter 2, are dealt with in the next chapter. It also reaches some conclusions on the case study.

Chapter 7

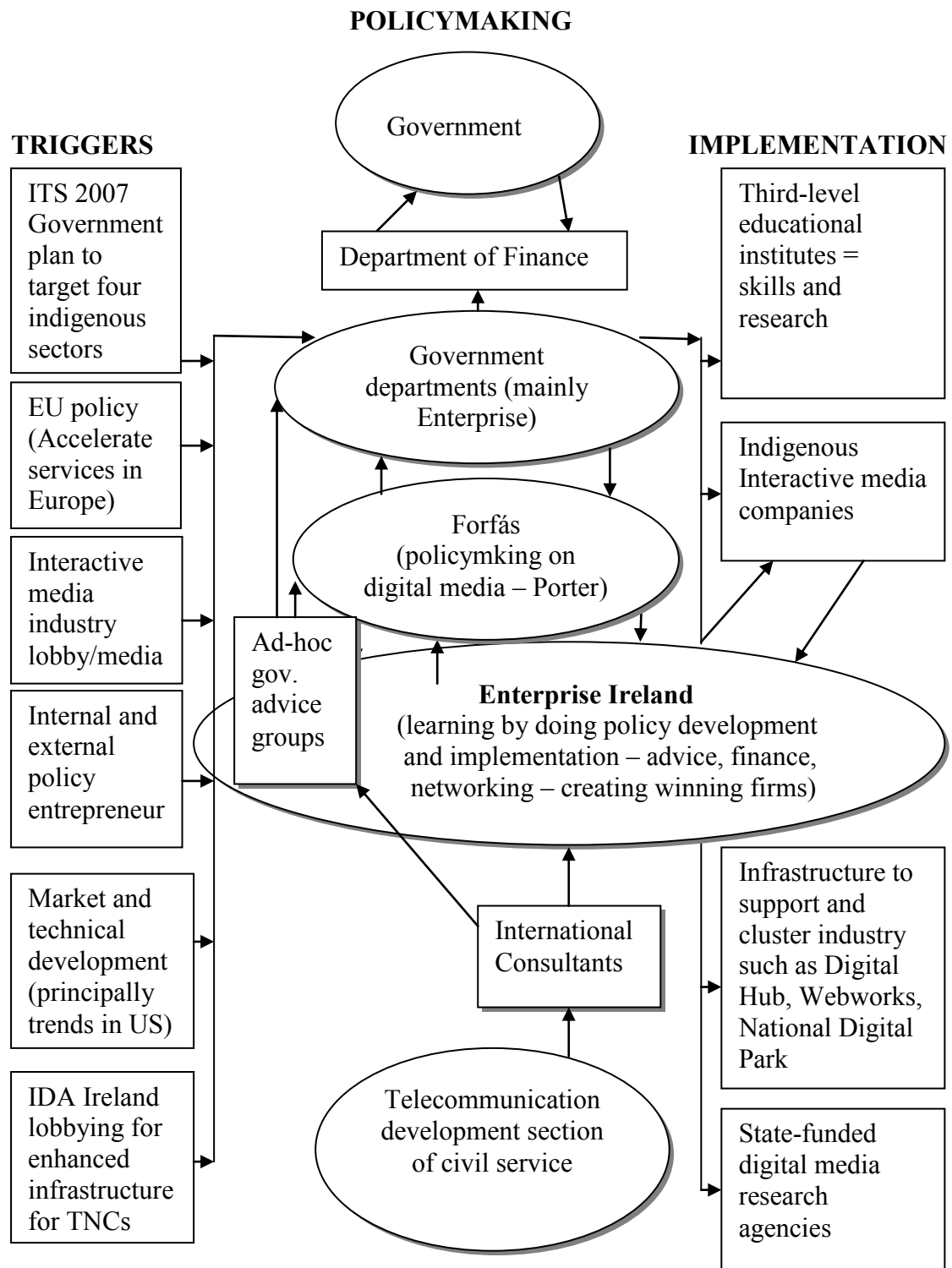
Conclusion and Implications of Findings

Introduction

The argument of this thesis was that the Irish state developed a new policymaking process towards growing indigenous international sectors from the mid-1990s. The case study showed that, although haphazard in the beginning, it did refine the model it developed for growing the indigenous software sector in the 1980s. The Irish state attempted to transpose this Developmental Network State model into different targeted sectors like interactive media, biotechnology/health sciences and e-Business. The hybrid model of policymaking for the indigenous interactive media sector which had evolved by the end of this study in 2004 is represented diagrammatically in figure 7.1 following. It was a hybrid between Japan's highly bureaucratic and structured system and the less stringent industry-led north American model.

It was a trial and error, pragmatic strategy, not driven by any underlying ideology. In effect, the Irish state enterprise agencies were learning from experience of what worked and what did not and then trying to translate this into policy. These sectors were chosen principally for their international growth potential, export income and ability to add value. The officials implementing it had no way to explain their strategy or a title for it. Some senior Irish officials branded this strategy as an opportunistic –future grabbing” policy. Once a sector was chosen, the state and its enterprise agencies used mainly micro supports in an attempt to assist the sector in becoming internationally competitive. The case study showed, however, that in the case of the interactive media industry, the model was far from perfect and the results were mixed.

Figure 7.1: The hybrid public policymaking model developed by the Irish state to develop the interactive media industry (2004)



Source: by author

The interactive media companies that did grow to be internationally competitive were taken over by foreign companies. This suggests that there was a problem with a small peripheral state trying to service clients in high tech sectors. Clients generally wanted companies located close to them. The problem was that most clients were in major markets such as the UK or America.

Overall, very few companies assisted by the state survived long-term. But other companies grew from the ashes of failed ones or from the skill base and contacts established. They provided a new internationally competitive indigenous industry producing high value employment and generating wealth for the country. Many of these companies were located in an engineered cluster in south-west inner city Dublin in the state-backed The Digital Hub. The relative success of The Digital Hub and other fruitful policy actions cited in this study counteract criticism that during the time of economic boom the Irish state did little to prepare for the future. Albeit, it could be argued, that it did not do enough particularly when compared to similar sized states like Singapore. This thesis provided detailed evidence of the “behind the scenes” policymaking process that was taking place during the study period. It showed too how the state formed an alliance with an indigenous technical entrepreneur group in interactive media to pursue its state developmental policy during this period. Members of this group were brought into the policymaking system through various routes, formal such as sitting on ad hoc government committees or informal through contacts with policymakers.

This relationship is shown in the hybrid model that the Irish state developed by 2004 to develop the indigenous interactive media sector is outlined in figure 7.1. It shows on the left column where the triggers for policy action were coming from. These were

principally from the then government's 2000 policy (a coalition between Fianna Fáil and a pro-enterprise party the Progressive Democrats) to try and develop the indigenous service sector. This was articulated in the government's ITS2007 policy document which targeted interactive media along with three other indigenous sectors for international growth. Another trigger was European Union policy to develop Europe's service sector generally, but its interactive media sector in particular. Diffusion of knowledge about emerging technology and global market opportunity in interactive media also acted as a trigger. This was through the media, lobbying by industry groups and attendance by state officials at international conferences. Most of this information was emanating from the United States of America. Policy entrepreneurs, both internal such as officials in the enterprise agencies and external, such as business people with access to senior politicians, also acted as a trigger. These generally had specific projects, such as seeking to attract state support for Media Lab Europe or to develop Dublin's Digital Hub, for which they were seeking state support. However, these policy entrepreneurs with specific projects often met with a welcome inside the policymaking system by internal policy entrepreneurs who saw their role as 'opportunistic future grabbers'. The final trigger, but yet one of the most powerful, was IDA Ireland and its alliance to the TNC's operating in Ireland. Although it was triggering policy actions to both retain and attract TNC software and digital media companies, the policy actions they triggered did have significant impact, both positive and negative, on the development of the indigenous interactive media industry and was an important part of the hybrid model.

Those involved in the policymaking itself, their interaction between each other, triggers and implementers, are shown in the centre column in figure 7.1. While

triggers were entering the policymaking system at various levels, by 2004, the Irish model had given supremacy to Forfás when it came to enterprise policymaking. It was specifically targeting the development of the interactive media sector in Ireland by both indigenous and TNCs. Forfás was researching in-depth international market trends in the area and evaluating what policies were appropriate to enable the sector to grow. This research was being conducted by both its own staff as well as being commissioned from international consultants. It was also evaluating the skills requirements for the sector and the amount of relevant research and development being undertaken. Its research also involved focus groups with industry representatives, both of the indigenous and TNC interactive media companies, to assess what policies or supports the state could provide to help the sector grow. Forfás' underlying model was that of Porter's Diamond (1990) in that it was trying to policy make to enhance the factor conditions of Ireland's interactive media industry in order to make it internationally competitive.

An important part of Forfás' policymaking was 'learning by doing' and evaluation. This involved assessing what the state enterprise agencies like Enterprise Ireland and IDA Ireland were doing with their interactive media client companies. What interventions worked, what international sub-sectors were doing well, what new technologies were lifting-off. Special ad-hoc expert groups were also used by Forfás and government departments to help advice on policy. For example, the Expert Group on Future Skills Needs, made a series of important recommendations about the skills required to help develop the interactive media industry.

Forfás' role was effectively a hybrid between that of the Ministry of International Trade and Industry (MITI) which guides strategic industrial development in Japan and that of the interactive media lobby groups in high tech regions of north America. Like MITI it was also seeking consensus, aiding strategic planning and providing advice. Where it differed, however, was in its authority to direct interactive media companies to act in certain ways. Forfás did not implement policy, but instead just advised the other state agencies on what it should be and oversaw its implementation. It had few, if any, powers of sanction if agencies did not implement its plans.

However, on the other extreme, Forfás had more legal authority and was much better resourced than the interactive media industry lobby groups in Silicon Valley, New York or Texas. Groups like the Florida HighTech Corridor Council, the Digital Media Alliance Florida and Digital Media Collaboratory (DMC) in Texas had a strong influence on the development of policy for the sector in their respective regions. They had, however, no legal authority to make policy for the sector.

The role of Enterprise Ireland in this hybrid model, Figure 7.1, is important too. It straddles all three stages of the policymaking process for the interactive media sector - triggering, policymaking and implementing it. Its principal statutory role, however, is supposed to be largely policy implementation. But this empirical case study clearly showed that its role was much more complex than this. Due to its interaction with companies in the interactive media sector there was a two-way information exchange taking place. Just as Enterprise Ireland officials were giving advice to companies, were also learning from them a great deal about the emerging and constantly changing interactive media sector. This information was then been diffused to other companies

in the sector and to government departments and Forfás. It was effectively ‘learning by doing’ and quickly implementing this into policy. In addition it was implementing policy from Forfás and the Government to try and disperse enterprise development across the country. It was encouraging its interactive media industry clients to expand in different parts of the country using financial incentives. Enterprise Ireland was also a key investor in the sector, both directly and via the venture capital funds it financially supported. Being an important source of finance to indigenous interactive media companies, it gave it leverage over the strategic direction of its clients. This meant firstly it could incentivise them to develop into international markets by developing products or services. Grant assistance for international market research, product development and management development were also offered to companies which adhered to its guidance. This gave the agency a close relationship with the companies in the sector and access to important information on two things. Firstly, what worked and did not work, in terms of state support for companies. Secondly, working closely with many companies in the sector gave the agency’s officials unique insight into the industry internationally. Enterprise Ireland also had staff in Silicon Valley, London and New York, where it had incubator units to help its client companies expand internationally. The information flow allowed the agency to develop a ‘learning by doing’ approach to policymaking. Enterprise Ireland was also feeding up issues for policymaking action to Forfás or the relevant government department or agency. Enterprise Ireland also conducted an annual survey amongst its client firms to assess issues affecting their development. The issues arising from this requiring policy action were also feed either horizontally or vertically to the appropriate agency for action. The model is far from perfect, however, as there was evidence that many issues which the indigenous interactive media sector required, for

instance suitable premises, equivalent tax incentives to Canada and so forth, were not addressed. Enterprise Ireland's 'learning by doing' knowledge of the sector was also important in informing its decision-making on what sub-sectors of the industry not to support. So, for instance, although Enterprise Ireland frequently got proposals from entrepreneurs who sought to develop console or PC-based games, it rarely supported them viewing the industry as too high risk and Ireland lacking the skills to succeed in it. It did, however, after 2004 begin to invest in online gaming companies as there were lower barriers to entry than console games. The Department of Finance is included in the model as it had to sanction the budget for any major initiative usually after a cost benefit analysis and reading a 'independent' assessment of the project by consultants. The various other government departments, principally education and science, enterprise and employment and communications, were part of policymaking for the sector generally based on requests for policy actions from Forfás, Enterprise Ireland or recommendations in reports from government-appointed committees.

The final stage of the hybrid policymaking model was implementation, represented in the final column in figure 7.1. Third-level colleges, both universities, institutes of technology and private operators, implemented much of the skills policy. They provided courses in the areas identified by the policymakers, typically Enterprise Ireland, IDA Ireland and Forfás, as important for the development of the interactive media sector. They also provided research services. Many of these research projects were funded by Enterprise Ireland and aimed at assisting the industry's development or exploring an emerging area in interactive media. As well as being informative, these projects often helped develop a skills base. Third-level institutions also often fed-back into the policymaking system. The most important implementers of policy

were, however, the companies in the sector that were being assisted by Enterprise Ireland. These had to be export orientated companies with high growth potential and with the ability to employ over 10 people within five years. But in addition to being implementers of policy, they were also important contributors to both policy triggers and policymaking. The other implementers were semi-state companies like the Digital Hub Development Agency, established in 2003. Not only did this provide a physical space for digital media companies in a cluster in south inner city Dublin but it also attempted to get companies to network. For instance, it organised monthly chief executive forums to get companies in the hub to both work together but also to articulate common concerns which the hub management would try to address. One concern, for example was typically the lack of appropriate skills. There were other specialist digital media incubators in Galway, Dun Laoghaire and other parts of the country which were state funded. Finally, the largely state-funded Media Lab Europe research centre, which was replaced after its closure with the National Digital Research Centre, was another component of policy implementation. Both were located adjacent to Dublin's Digital Hub.

This new hybrid model, as seen in figure 7.1, developed by the Irish state for the indigenous interactive media sector was an holistic complex model of policymaking. While elements of it fit neatly into the complex holistic theoretical frameworks for analysing policymaking outlined in table 2.3, other parts of the new Irish model do not. The Advocacy Coalition Framework (Sabatier and Jenkins-Smith, 1988) was the most complex one studied. It can be seen from the Irish model, figure 7.1, that there was an unopposed coalition ranging from the interactive indigenous and TNC industry, to policy researchers and the media in favour of developing the sector. This

remained stable for the 10-years of the study, although the mechanism to achieve it or their secondary beliefs did change. It was also clear from the study that the role of policy entrepreneur was very important in the Irish model as well as learning by doing over a 10-year period. However, by 2004, Forfás had established its supremacy as the main statutory policymaking agency. There were areas where the Irish model differed from the Advocacy Coalition framework, but its originators Sabatier and Jenkins-Smith did warn that the framework was a work-in-progress and not supposed to be accurate all the time. So this framework was useful in understanding the Irish model.

There is evidence in the new Irish hybrid model that policy diffusion, as theorised in frameworks developed by Berry and Berry (1999, p 171) and Walker (1969), is a fundamental part of the model. There is evidence that the three diffusion frameworks examined in the literature review - National Interaction (state officials learning from peers), Regional Diffusion (states influenced by neighbours) and Leader-Laggard (certain states are pioneers) – all help to understand the new Irish model. Most of the policy entrepreneurs, industry lobby groups, media and IDA Ireland triggers for policy action came from one of these types of policy diffusion. The Irish hybrid model was particularly influenced by developments in North America and to a lesser extent the United Kingdom.

The final complex holistic framework examined in the literature review, Policy Domain/Reputation (Laumann and Knoke, 1987, pps 152-89) was useful in ascertaining what institutions/actors to study within the policymaking domain. This helped in identifying who to include in the model, in figure 7.1. The only difficulty with the Reputation Model was that throughout the 10-year period of the study the

institutional nature of the policymaking network was changing. However, the surveying of actors in the system only happened once. Thus, if the Reputation Model is to be of full utility for a study over a number of years, then surveys would have to be conducted amongst actors on a few occasions over the study period. Thus the three policy diffusion frameworks were useful for this study and understanding the new Irish model.

The other issue to address is how effective was the Irish hybrid model. One way of doing this is to contrast the model that evolved over the same period in Singapore, a country of similar population, language and enterprise policy. Its policymaking model for interactive media by 2008 was far more specialised and much better funded than the Irish one. It set about establishing itself as the media bridge between the East and West. It had established a specialist research funding agency for the sector, the Media Development Authority. It had also attracted in specialist media venture capital funds like the Salon Media Management's Integrated Fund. Its investment in education for media careers was also significantly above that in Ireland. It had also attracted in leading world media technology conferences and begun to build Mediapolis, a specialist 19 hectares hub for TNC and indigenous media companies to cluster in. This benchmarking exercise thus shows that while the Irish policymaking system was good, it lacked focus, finance and specialisation. By 2005, Singapore's media sector employed 53,000 people and produced €10.4 billion in revenue, according to the Singapore Economic Development Board. Singapore had become the broadcast hub of Asia with CNBC, MTV, HBO, Discovery and ESPN having their regional headquarters there. While Dublin later attracted Google and Facebook, the level of employment, growth and value added, of its indigenous and TNC sectors was

significantly less than that in Singapore. This was despite the fact that in 1994, Ireland was a leader internationally in interactive media and was enjoying first mover advantage in the sector.

This study contributed new understanding of the policymaking process to promote targeted enterprise sectors in a small open economy competing in a global market. It produced several major findings about policymaking for the interactive digital media sector in the period 1994-2004 and several secondary ones. The findings can be summarised as follows:

Summary of major findings on public policymaking in Ireland

Irish policymakers were in the late 1990s refining an approach of pro-active highly selective targeting of indigenous enterprise sectors with potential for high growth in global niches (main case study). Most of this selection work was sub-contracted to private consultants. The consultants' findings, however, were influenced by officials in the state enterprise agencies. Four sectors were chosen for indigenous development in 2000 based on existing capacity, value added and growth potential. Other sectors with less potential, as assessed by the consultants, were dropped. The drawbacks, however, of this targeting approach were many. One of the main drawbacks was that the sectors selected – health science/biotechnology, digital/interactive media, informatics and e-Business – were also the ones targeted by other states. This meant that state support in Ireland would not necessarily help produce competitive advantage. The other danger is that it may have diverted support for other emerging sectors. The study, however, did not look for evidence of this.

The second major finding was that the Irish state's policymaking by the late 1990s was largely based on enhancing the factor conditions to make these selected sectors internationally competitive (main case study). The state also tried to shape the environment in which the firms operated at a macro-level. The model that was being followed here is one adapted from Porter's diamond model (1990). It was effectively trying to improve the factor conditions that are important to the growth of an industry. This involved establishing in Ireland specialist centres to cluster interactive media companies to create formal and informal synergies. The most successful example already cited is Dublin's Digital Hub where 87 digital media companies, of which the majority were indigenous, were based in 2010 (The Digital Hub, 2010). Several other digital media incubation centres were located around the country. Incubation space in San Francisco and London was also offered to qualifying Irish interactive media companies. The interactive media industry was highly concentrated in clusters, principally in the south Dublin suburbs and south Dublin inner city. This was before the state intervened to engineer clusters. There were much smaller clusters emerging in Limerick and Galway. The Dublin cluster mapped on to the existing software cluster in the capital. This indicated how the indigenous interactive media industry relied on the skills and infrastructure in its early days from the existing software industry. It also showed the importance of dense informal networks of creative and technically skilled individuals.

The state's macro-level involvement also required the state planning ahead to try to ensure the appropriate skills base was available. This was through the state and in some cases European Union, backing the establishment of specialised courses and funding them, principally in universities, further education colleges and institutes of

technology. This led to a rich institutional support structure, both state and semi-state, evolving around the indigenous interactive media companies.

However, the majority of major educational, infrastructural and legal development relevant to interactive media was implemented and funded at the behest of TNC companies. The indigenous interactive media sector was an indirect beneficiary of this. This included major investment in broadband capacity to service the European market from Ireland, more stringent copyright legislation and laws to encourage e-Commerce. TNCs based in Ireland were also important first customers for the early indigenous interactive media companies. Having the TNCs as customers helped the indigenous companies in their marketing and in developing their skills serving a sophisticated customer. The TNCs did not, however, provide many other spin-offs for the indigenous sector. Spin-offs came principally from successful indigenous companies. The creation of these spin-offs from indigenous companies was actively encouraged by the state enterprise agency.

The third major finding was that Irish policymakers, through on-going interaction with high potential companies, monitored factor conditions that affect the targeted sectors (embedded case study, chapter 4). At a micro-level the state attempted to shape the development of selected companies in the sector. This was largely through the use of financial incentives linked to company actions. To qualify for significant state assistance in the first instance, companies had to show international ambition. Thus, from a very early stage in an ambitious company's development, the state was trying to connect them into the global business and technology network for interactive media. However, the state found it hard to know how best to support interactive media

in the first instance. It went from being an enthusiastic supporter, viewing it as part of the software sector which it was anxious to support. However, after initial success via the state-backed Multimedia Technologies Ireland, heavy losses in the company saw it effectively abandon the sector for several years.

Although the state had a selective approach as to which companies it assisted, its policy was effectively to grow winners rather than back them. Ironically, the more successful the company was, the more state backing it got as this was seen as the best strategy to create employment. Officials within the state agencies built their knowledge of the interactive media sector through working with companies, albeit sometimes in a haphazard way (for example several officials dealing with the one company). They used this knowledge to share expertise amongst client firms. This added to its selective approach as to which companies it would support.

Enterprise Ireland helped grow these targeted companies firstly by providing financial support, advice and a network of contracts, to build-up the strength and capacity of the company and its management. Secondly, it helped by incentivising the selected companies to become both export and product orientated. This was done through advice, the enterprise agencies' network of overseas offices, its incubation units in key markets and financial incentives linked to research and development and overseas marketing.

The fourth major finding was that the small size of the Irish policymaking system gave it agility to respond quickly to changing factors affecting the targeted sector (main case study and embedded case study). Although outside the scope of this study,

the influencing techniques used by the Irish state to shape the sector – priming venture capital, providing equity, networking, market sector advice, skills development, research and development funds and internationalisation – were similar to that used in Israel, Taiwan and to an extent latterly seen towards indigenous sectors in Singapore. Thus it could be concluded that the Irish state has developed its own hybrid model of development at a micro-level. It was similar to but much less rigid than the more controlling bureaucratic Japanese and South Korean models of a very centralised bureaucracy suggested by the Telesis report in 1982. The model pursued by the Irish state confirms and supports that of the Developmental Network State, as argued by Ó Riain (2004). It was effectively an extension and refinement of the model the Irish state evolved for the indigenous software sector from the mid-1980s. It was a pragmatic learning by doing model. A similar type of model was being applied to targeted companies in the indigenous interactive media industry during the period of this study. The state promoted local learning within global networks through a decentralised but accountable set of state institutions. These institutions maintained close ties to local technical communities and international capital. The Irish state was trying to shape the development of a portfolio of selected interactive media companies using equity as a lever. It was trying to connect these companies in to international business network and influence their research and development strategy, business direction and capacity to create jobs. Unlike the Japanese and South Korean model, the state was generally working with relatively small companies and was not attempting to shape the structure of the industry per se. The Irish state was shaping this growth in a non-bureaucratic, non-centralised manner, like Taiwan and Israel, not the more centralist controlled Japan and South Korea.

They shaped their growth in a much more bureaucratic, centralised manner leading Ó Riain to term them as Developmental Bureaucratic States. These were based on alliances between a cohesive state bureaucracy and large firms and business groups (2004, p. 6). It also involved the state targeting sectors which it believed would experience high future international demand as well as stimulating domestic demand for these products or services.

The final major finding was that there was a nascent unopposed coalition of industry, academic, media and some state official actors who advocated specific state support towards making the indigenous interactive digital media sector internationally competitive (chapters 5 and 6). This coalition formed an important formal and informal institutional support to companies in the interactive media sector, many of which were in a very fragile state through much of their existence. Significantly, unlike previous emerging industries, this coalition accepted failure in a business as a valuable learning experience. There was strong co-operation as well as competition between those in this coalition. This involved intense competition between firms for contracts as well as informal collaboration and information sharing.

Secondarily, this study showed that rational policymaking for targeted enterprise sectors is subjected to amendment by civil servants to ensure political consensus (main case study, chapters 5 and 6). It was also found that companies in sectors targeted for international growth can be subjected to irrational policies to meet political goals (embedded case study, chapter 4). Furthermore, the higher the level of the public policymaking apparatus at which policy is proposed, the greater chance it has of being adopted for the targeted sector (main case study). Another finding was that diffusion of North American knowledge about targeted sectors is a key input into

policy formation for targeted sectors in Ireland (main case study). The consultants' research is often heavily guided by state officials who must endorse the findings. Their research is also based on existing capacity that certain sectors have. This can be reflected in the findings which again merely provide more support for a policy that officials wanted to pursue in the first instance.

Conclusions on the study question

This study set out to investigate what was the policy formulation process used by the Irish state between 1994 and 2004 aimed at developing the indigenous interactive media sector? The conclusions of this study related to this question are presented in the following section.

Records showed that by 1994, the state had effectively sub-contracted development of the sector to a semi-private company based in Limerick, believing multimedia to be a part of the software industry. Other initiatives by policy entrepreneurs failed to re-awaken the state's interest in the sector. This lasted until 1998 when diffusion of information about the success of interactive media companies, due to the rapid uptake of the Internet globally, led to renewed interest in the sector at a macro-level. Interactive media was selected in 2000 as one of four key target sectors by the state for specialist assistance to increase exports of indigenous internationally traded services. Other top-down approaches from government to aid the sector's development included the Taoiseach's office attracting Media Lab Europe to Dublin and also creating two digital hubs in Dublin: the most successful, the Digital Hub, near the city centre and another, ultimately less successful as it was difficult to attract people outside of the city centre, was in Citywest industrial park in the suburbs

housing mainly data centres. The study provided a useful analysis of the characteristics of the policymaking process. The study identified interactive media policymaking in the period of this study as proactive initially, stalled until 1998, then re-active, and from late 1999, pro-active, systematic and analogues. The study uncovered the importance of policy entrepreneurs; diffusion and learning by doing in policymaking that had not previously been shown.

Those actors in the policymaking process to whom the findings were put did not dispute them. They did question the emphasis this study placed on some elements of policymaking but did not question the accuracy. This congruence indicated that these measures have a high degree of validity.

The utility of using a multiple set of measures over three different aspects of policymaking and an extended period of 10 years was also established by this study. Taking a time period instead of a snap shot showed the evolutionary nature of the policymaking process, its variability to outside interests and the role of its advocacy coalition. This increased the finding's validity. So too did the inclusion of un-enacted policy with enacted policy, as it gave a more complete picture and of the power structure within the policymaking apparatus.

There was not an opposing coalition to the group seeking to develop the indigenous interactive media industry. The reasons for this are probably fourfold. Firstly it was a nascent industry, so opposing groups had little time to form. Secondly, senior bureaucrats within the system went to great lengths to ensure consensus on policy issues affecting the sector. They did this through encouraging wide scale involvement

of key actors in the policy formation stage. These senior state officials also neutralised or had objective criteria to support potentially contentious policy decisions. The exceptional economic growth in the Irish economy during the study period meant that funding was available to implement interactive media policy without necessarily taking it directly from other programmes. The final reason for the lack of alternative coalitions was that it was a specialist, sophisticated area where only experts followed most policy decisions. The benefit of using the Advocacy Coalition framework to help analyse the policymaking system for the indigenous interactive media industry was demonstrated in this study. It was particularly useful as the study period was over 10-years and the framework allowed the role of learning by doing and evaluation to be more clearly understood. It was easier to study a network and actors, as articulated by the framework, rather than particular policies or institutions as these changed over the study period.

A secondary question sought to ask if small peripheral states like Ireland can devise an effective policymaking system to sustain the development of internationally competitive indigenous industries? The evidence suggests that a small peripheral state like Ireland was able to develop such a policymaking system. It was relatively effective in sustaining the development of an internationally competitive indigenous industry. However, as discussed later in this chapter, this research does raise the question of if small peripheral states can retain indigenous high tech companies once they reach a certain size.

Thirdly, the research asked if the Irish state help create spin-offs of successful indigenous industries like software? After a haphazard start by the Irish state it was

able to create a spin-off from the software sector. Interestingly, this was one of the first instances when the state was able to help create a spin-off from an existing indigenous industry. However, as this research showed, the spin-off is likely to have happened even without state intervention. The research suggests the state's intervention did help accelerate the development of the spin-off sector, but there were limits on the power of the state to influence an industry due to the global nature of the industry. Also actors within companies can easily exit the system of state control. The state did intervene in areas under its control. This was in helping to shape the skills level of the workforce for the spin-off industry and also provided its required infrastructure and in some cases venture capital.

Implications for Irish indigenous enterprise policymakers

This study's findings have many implications for policy makers and external actors in the policymaking process for indigenous industry. They provide guidance in the areas where policymaking can be further refined.

The landscape in which policymaking takes place for enterprise in Ireland changed significantly from 2007, when the country entered a deep recession which has lasted until the time of writing. The European Union and International Monetary Fund had to intervene to bail-out the Irish economy in November 2010 at the time of writing. The severe cutbacks in public expenditure, coupled with the need to create and sustain employment, has turned policymakers attention away from long-term decision making and back to an acute stage. Much of the policymaking now takes place in the EU and IMF rather than within Ireland. In addition, global competition is intensifying, particularly in high growth, high value added service sectors. EU regulations, which came into force in 2006, further restricted state subsidies to enterprise. Irish cost

competitiveness had eroded up to 2007 and other countries were emulating its policies, particularly on low corporate tax, skills development, incubation and other areas. Policymaking to keep generic enterprise factor conditions such as cost competitiveness, innovation, entrepreneurship and management capability have to be enhanced.

In high tech sectors, business models and structures change rapidly. Irish policymakers experience these changes through the companies with which they work. But each year new companies emerge internationally which threaten to undermine the established order. As businesses have to reinvent themselves faster than ever, so too do countries and their policymakers. Developed countries like Ireland depend on increasingly sophisticated knowledge-based activities to facilitate the businesses of the future and sustain and create high value added and high-income employment. Irish policymakers face the challenge of anticipating and adjusting quickly to these global changes. It will require a move to much higher levels of expertise, productivity, performance and even more focussed investment in research activities than existed in the 1990s.

But for targeted sectors of indigenous industry, more tailored policies must be introduced that are reflective of their conditions for competitive advantage. The more targeted approach of Singapore to the development of the sector, with its specialised agencies, appears to show more appropriate policymaking with better results. While not a core part of this study it is obvious that excellence in executing policy by the state's apparatus has not always been a distinguishing factor. Since the Telesis report in 1982 (NESC, 1982), for example, the critical need to develop international sales

and marketing capacity was identified. The Enterprise Strategy Group (Forfás, 2004), some 22 years, later made the same finding. Similar gaps in intelligence gathering on targeted sectors by the state agencies, finance and infrastructure have also been identified for over two decades. Keeping pace with developments in fast moving high tech sectors is a dynamic process for both companies and states. More recent reports (See Forfás, 2006; Forfás, 2008a; Forfás, 2008b; The Institute of International & European Affairs, 2008) indicate the skills and infrastructural gaps that have emerged in indigenous industry in general, including the indigenous interactive media industry. This was despite economic prosperity and pro-active policymaking in the preceding decade. With global competition intensifying, pro-active policymaking and excellence in execution are critical for targeted sectors. Just like businesses need to be close to their customers to understand their needs and service them, so too must policymakers.

This study has shown the benefit of specialist agencies like the National Software Directorate that was able to pro-actively and creatively act as a catalyst to improve the factor conditions of the indigenous software industry. This shows the benefit of policymakers paying close attention to companies and the marketplace. Policymakers also need to design and implement an evaluation system that identifies policymaking weaknesses. This must be fed back into the policymaking loop. Just as indigenous companies competing in international niches must outpace their competitors, so too must the Irish state's policymaking mechanism for them. It must refine its policymaking to ensure it can outdo competitor countries with the agility with which it can anticipate and respond to changes in increasingly complex markets. This is done by collective and collaborate learning by the industry and having institutions to support this.

Industry lobby groups must take a more pro-active role in articulating to the state's policymaking process relevant improvements required to their factor conditions to keep them competitive. They have to understand this new policymaking process. If they cannot convince the state that their sector has high growth potential and can capture a global niche, it is unlikely to attract state support in future. These lobbyists must themselves formulate a strategic plan for their sector to re-enforce its competitive advantage. They should also monitor and evaluate the policy process both in Ireland and in competitor countries. Strategies to improve it should be articulated and fed back into the policy loop as part of the lobby group's evaluation.

Implications for policymaking analysis

This study also had significant findings for policymaking analysis. It identified a number of useful tools for analysing the policymaking process. The most significant was the extensive utilisation of the Freedom of Information Act, 1997 and the crosschecking of the records it released against interviews with relevant actors. It should be pointed out, however, that although three of the Freedom of Information Act's 14 restrictions were cited to prevent release of records during this study and were subsequently successfully appealed, this may not hold true for similar studies in other policy domains. There are absolute exemptions under the act for records relating to foreign policy, security and Northern Ireland. In addition, the act was amended in 2002 in such a way that will potentially further restrict access to policymaking records.

The study of public policymaking has made considerable progress since its inception in the 1940s. The other research element was the use of models and frameworks

developed in the literature. These included Knoke's reputation model and Brewer and deLeon's (1983) policy derivation framework. The utility of Knoke's model was tested in chapter 4. Its usefulness was tentatively affirmed. The usefulness of the framework in combination with a case study was affirmed. The difficulty remains that the volume of case studies required to build a robust universally accepted mode of analysis has not been what it might be.

Public policy scholars and practitioners can learn a great deal from the policymaking experience of other states. Ireland is a relatively small state but its economic success in the late 1990s gave it an international prominence much greater than its size. Ireland has made dramatic steps in attempting to influence and manage its economic future as policy elements like currency control, state subsidy, borrowing and others were taken over by the European Union. Only time will tell if the evolving policymaking method is sustainable. Its policymaking processes are important firstly for other states to learn from but also for it to refine further to remain competitive in an increasingly aggressive globalized world. The enactment of policy reflected the convergence of beliefs and the opening of a window of opportunity for policy. Proposals that made progress but were not enacted were interpreted as an indication of a window of opportunity that was not taken advantage of or a window that did not open wide enough to allow enactment to occur. The involvement of political actors at different levels, 1 to 5, was explored in this study. These ranged from the Taoiseach and ministers to opposition politicians. The importance of political actors was seen in broad agenda setting. But it was largely absent from when these broad political goals had to be translated into tangible programmes. This instead was largely the domain of private consultants under the guidance of enterprise agency officials, civil servants

and, to a limited extent, lobbyists and policy entrepreneurs. This level of policymaking has become extremely technical and has to be left to experts, as opposed to politicians who tend to be generalists. But the end result had to be made politically defensible by senior civil servants. Notably it was not the politicians who did this or demanded it. The degree of action taken on a policy proposal is dependent on the perceived power of the policy entrepreneur and their level in or access to the decision-making system. The higher the level a policy entrepreneur had access to, the greater their chance of success. To summarise then, the study found that the formation and adoption of public policy is a complex subject worthy of serious academic attention. It can lead to the creation of a more responsive system of policymaking.

(1)Areas for future research

Although the findings of this study are important, they leave many critical questions unanswered. A lot of work has still to be done in building theory and refining useful analytical models and frameworks for the study of policymaking. During the course of this study, numerous areas where further research on policymaking was required were identified. The principal ones were to build on existing models. The diffusion of policy into Ireland was discussed but not examined in-depth. Ireland adopted several innovations from other countries mainly America. This singular case study is not enough to provide evidence of the importance of diffusion to Irish policymakers. Research needs to be conducted on state policy actions that can be isolated by their origin and the date of adoption.

This study focused on policymaking rather than policy implementation. It would be useful to study implementation of policy particularly towards targeted sectors. There

are some methodological problems with the policymaking theory that could be improved upon to assist further studies like this. Many of these problems relate to the lack of clear definitions of key terms. These include policy entrepreneurs. Further research should focus on developing methods that can lead to greater specification of policy entrepreneurs external to the bureaucracy. It would be useful to be able to identify at the beginning of a policymaking process who the entrepreneurs are, so that their efforts and influence could be measured while the process is underway. They are not denoted by formal title or position so using Knoke's reputation model to select institutions to study can omit them. A list of defining characteristics of a policy entrepreneur would be useful. This singular case study demonstrated their importance to the policy process. Their contributions are a good deal more complex than first considered. Their motivations are also hard to discern. Their contributions were, for the most part, very positive to the policy process. Another critical research issue is to identify and specify the policy agenda. Objective measures are needed to determine what topics are on the agenda and what rank or priority they have been accorded. More work of this type is required.

(2) Contribution to knowledge

This study was set within a range of literature on public policymaking that dates back to the 1940s. What is new is the evidence in the findings in chapters 5 and 6 of a new method of enterprise policymaking for indigenous sectors in Ireland. It partly fills the gap in Ireland's political economy literature identified by MacSharry and White (2000), O'Donnell (1998) and Ó Riain (1999). This was the lack of knowledge about how industrial policy worked in practice in Ireland and a detailed exploration of how Irish policy was developed in practice as opposed to official statements as to how it worked.

It shows the role of the state enterprise promotion agencies in formulating this policy. This new policy was based on targeting a few selected sectors where Ireland could capture a global niche and enhance the factor conditions to achieve this goal. It showed too how the small size of the Irish policymaking system gave it agility to respond quicker than competitor countries with regard to these sectors. The influence of factors on policymaking, such as North American policy and TNCs, is demonstrated for the first time using records released under the Freedom of Information Act, 1997. So, too, is the role senior officials play in interfering with consultants' recommendations to ensure political consensus. The irrationality that political goals can cause to state enterprise policy was also demonstrated for the first time through these records. In chapters 5 and 6 it was shown how some state official actors joined a relatively stable coalition with external actors to promote a targeted sector. Furthermore, the empirical evidence from the indigenous interactive media industry contributes to a clearer understanding of such issues as globalisation and clusters.

The research approach – extensive use of Freedom of Information legislation, case study, framework and the use of some models set out in chapter 2 which were empirically tested in chapters 4 and 5 - offer a new tool box for scholars of public policymaking. The depth and detail of information attained in the study of the policymaking process in Ireland for indigenous enterprise is unmatched in this literature to date. It will thus make a contribution to the political economy literature in Ireland.

The ability of Ireland's indigenous enterprises to produce and sell globally products and services will be critical for the employment, wealth and the future welfare of the Irish public. This ability will, to a great extent, be dependent upon the government's apparatus refining appropriate integrated policies across a range of domains and implementing them successfully. To do this effectively in a changing international environment, it must refine an informed and agile approach to policymaking for the enterprise sector. This goes to all strata's of the state, including education and training, competition law, taxation policy, government procurement, infrastructure and regulation. Structures must be incorporated to ensure that all elements of government operate in unison, which this study showed was not always the case. The finding of this study advances the measurement and understanding of the policymaking process. The results of this study may lead to a more informed approach to policymaking and more effective inputs leading to better policy output. This study identified and showed the new hybrid policymaking model for the development of the indigenous interactive media industry in 2004. While the model that evolved has many positive points, it had many elements that needed further refinement and change. It needs this to keep the up with the more customised, focussed and well resourced policymaking systems for interactive media in rival countries like Singapore . This is particularly important in the context of a sector which is changing rapidly and is highly specialised. The Irish model waits for triggers from multiple sources, see Figure 7.1, but the systems in more agile competitor countries generates triggers within its own policymaking system giving it first mover advantage. The feedback loop is much quicker too in rival countries. This lesson must be learnt by Irish policymakers and changes made.

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Appendix A: Main case study protocol
(Adopted from Yin, 1994, pps 64-73)

- 1. Purpose:** To identify the policy making process employed by the Irish state between 1994 and 2004 aimed at developing the indigenous digital media industry.
- 2. Key features of case study method:**
Apply Yin's 1994 case study methodology. Have one main case study – the policy process and a sub-unit feeding into it:
 - a) Six case studies of indigenous digital media companies.
- 3. Procedures:**
 - 3.1** Identify institutions to be studied using Knoke's (1998) reputation model.
 - 3.3** Collect all relevant published materials.
 - 3.4** Make request, via Freedom of Information and voluntary disclosure for identified key documents.
 - 3.5** Appeal any denial or part denial of Freedom of Information request.
 - 3.5** Review documents.
- 4. Determine people to be interviewed and other sources**
 - 4.1** Identify individuals to be interviewed using Knoke's (1998) reputation model and document review.
This individual are from Government departments, Enterprise Ireland, Forfás and industry lobby groups.
 - 4.2** Request interviews using letter in Appendix C and schedule.
- 5. Establish case study database.**
 - 5.1** Use MS Word for notes and transcript. Manual secure filing system for paper records.
- 6. Define boundaries:**
 - 6.1** Establish definitions for ~~digital media industry~~, ~~indigenous~~ ~~public policy making~~ and set time parameters on study.
- 7. Identify key questions to determine from level 1 informants**
(Continued on next page)
- 8. Level 1 – Questions for investigator to answer after interviews with specific interviewees**

**Questions for investigator to answer
for each institution**

Appendix A: Main case study protocol (continued)

- | | | |
|-----------|--|--|
| a) | Information source used to keep abreast with digital media sector developments
Media (specify),
Lobby groups (give exact details)
Consultants (exact details)
Informal (exact details)
Formal (structured feedback loops)
Other (specify) | Sources of documentary evidence |
| b) | Information source used to keep abreast with digital media sector development in rival countries.
Media (specify)
Lobby groups (give exact details)
Consultants (exact details)
Informal (exact details)
Formal (structured feedback loops)
Other (specify)
Staff/embassies in these countries
EU meetings
Conferences (exact details) | |
| c) | Problem identification
Who decides on priorities in organisation?
How are problems identified?
Is this documented?
Formal/informal | |
| d) | How are solutions/ solution options formulated internally?
What is the internal approval mechanism for solutions?
Who internally has to approve solutions/chose options. | |
| e) | What is the format of solutions
e.g Programme, budget allocation,
Commission of consultancy report
Appendix A: Main case study protocol (continued)

Document to minister,
Industry training/R&D grants
Third level training | |
| f) | Legal regulations –internal and external
Tendering for consultants/ explain these?
EU subsidy regulations | |

- g) **What external approval is required**
Who within to organisation seeks external authorisation? From who?
Timeframe. How this primary organisation lobby?
What can the external body do to amend the primary body's policy suggestions?
 - h) **What is the timeframe from problem identification to implementation of solution**
 - i) **Is the policy process for the organisation mapped/ if not map it.**
 - j) **How is evaluation of existing policy built into the organisational structure?**
 - k) **Relevant section of draft shown and approved by informant.**
- 8. Analysis plan and case study reports:**
- 8.1 Write-up descriptive information for each institution.
 - 8.2 Write-up explanatory information for each institution.
 - 8.3 Pose **Level 2** questions i.e. questions asked of individual cases.
- 9. Cross-case analysis:**
- 9.1 Cross-analyse between different institutions.
 - 9.2 Write-up descriptive information of this cross-institutional analysis.
 - 9.3 Write-up explanatory information of this cross-institutional analysis.
- Pose the following **Level 3** questions: Those asked of the findings across multiple cases.
- 10. Complete sub-unit case studies:**
- 10.1 Complete cross report for case studies of the indigenous digital media sector (See protocol following, Appendix B).
 - 10.2 Pose the following **Level 4** questions: Questions asked of the entire study.
This includes using literature outside the case study such as Sabatier's 1998 advocacy coalition framework.
 - 10.3 Write-up this analysis.
- 11. Conclusions and findings:**
- 11.1 Pose **Level 5** questions: Normative questions about policy recommendations and conclusions, going beyond the narrow scope of the study.
 - 11.2 Write conclusions and findings.

Appendix B: Sub-unit 1 case study protocol

Indigenous digital media companies

(Adopted from Yin, 1994, pps 64-73 and Porter, 1990)

- 1. Purpose:** To identify the interaction between the indigenous digital media industry and the Irish state's policy making process for their sector between 1994 to 2004. This will then form part of the main case study – the identification of the policy making process employed by the Irish state between 1994 and 2004 aimed at developing the indigenous digital media industry.
- 2. Key features of case study method:**
 - Apply Yin's 1994 case study methodology.
 - 2.1 Complete six sub-unit case studies of indigenous digital media companies.
 - 2.2 Complete two desk-based surveys from existing records.
- 3. Procedures:**
 - 3.1 Identify from directories and Companies Registration Office indigenous digital media companies operational in 1994 in the Republic of Ireland.
 - 3.3 Stratify these as follows: Large being over 20 full-time equivalent employees, medium being 10 and micro being two or more.
 - 3.4 Randomly select four companies from each strata.
- 4. Determine people to be interviewed and other sources**
 - 3.5 Request co-operation from these 12 companies for a case study.
 - 3.6 Three companies were chosen for case study based on their willingness to co-operate. A fourth, agreed tentative co-operation, but was used so as to have range of companies across the strata. All would only co-operate on the basis of being anonymous for five years after 2004.
 - 4.3 In 1999 two additional start-up companies were added to provide the research with insight into the evolving environment for start-ups in the digital media sector. These were selected through informal contacts.
 - 4.4 Request the initial interviews. Use version of letter in Appendix C and schedule.
- 5. Establish case study database.**
 - 5.1 Use MS Word for notes and transcript. Manual secure filing system for paper records.
- 6. Define boundaries:**
 - 6.1 Agree with informants in each company the level of confidentiality.
- 7. Identify key questions to determine from Level 1 informants**
(Continued on next page)

Appendix B: Main case study protocol (continued)

7. Level 1 – Questions for investigator to answer after interviews with specific companies.

(Adapted from Porter, 1990)

	Questions for investigator to answer from interviews/documents of each individual case study company.	Sources of evidence
a)	Geographical and sectoral concentration Where located and why. What sector/sectors of the digital media industry is it in – product/service. Why?	Complete survey.
b)	Company formation and goals What is the goal of its promoters? What its labour structure – how many employees, Skillsets, salary levels, how many in each division - e.g. sales, creative and technical.	Interview
c)	Education and training of workforce Identify skills levels. Where did they acquire these skills? Any on-going training programmes?	Interview. Employment Agency survey.
d)	Infrastructure Infrastructure and required future infrastructure. e.g telecommunications, physical buildings, training, transport, particularly air.	Dept. of Communications. Forfás. Property surveys.
f)	Capital How is company funded. Did it get state assistance and if so specify. How does it raise more capital? Is it profitable? Investor goals.	Companies Office. Enterprise Ireland Database.
(g)	Size of companies in staff terms. Turnover. Inter-relationships.	Complete Survey
h)	Information diffusion	Media Interviews
i)	Demand conditions How demanding/sophisticated are customers. Client base. Size – private/public.	Interviews

Appendix B: Sub-unit 1 case study protocol (continued)

- | | |
|--|--|
| <p>j) Research and development
Quantity, type, cost, aims. State support for.</p> | <p>Enterprise
Ireland
database.
Company
Accounts.</p> |
| <p>k) Industry standards and regulation
Specify regulatory framework.</p> | <p>Technical
manuals.</p> |
| <p>l) Inter-company relations – competition, co-
petition and social relations</p> | |
| <p>m) Related and supporting industries
Identify who these are. How important are they?</p> | |
| <p>n) Internationalisation of companies</p> | |
| <p>o) Input into state decision making for sector
Attend seminars/conference – give opinions
Formal/informal meetings with officials
Complete surveys – how often
Member of state policy making body
Attend state forums/workshops on sector
Contribute to industry lobby group
Part take in case studies/ interviews</p> | <p>Enterprise
Ireland.
Forfás</p> |
- 7 Re-interview case study informants in 2001/2**
7.1 Go back briefly through questions in 7 above with company informants.
- Appendix B: Sub-unit 1 case study protocol (continued)**
- 8 Analysis plan and case study reports:**
8.1 Write-up descriptive information for each company.
8.2 Write-up explanatory information for each company.
8.3 Pose **Level 2** questions i.e. questions asked of individual cases.
- 9 Cross-case analysis:**
9.1 Cross-analyse between different companies.
9.2 Write-up and graph findings from two surveys.
9.3 Write-up descriptive information of this cross-company analysis and surveys.
9.4 Write-up explanatory information of this cross-company analysis and surveys.
- 11. Use findings to input into protocol 1, section 11.**

Appendix C: Sample letter of introduction

School of Media, Film and Journalism
University of Ulster
Coleraine
BT52 1SA

Tel: 0044 28 402 0000
E-mail: c.murphy@ulster.ac.uk

Date:

Interviewee name

Interviewee title

Interviewee address

Ref: Request for interview in relation to academic research into the policy making process for the indigenous digital media industry.

Dear *interview name*,

I am examining as part of a PhD thesis the policy making process used in Ireland by the state to develop the indigenous digital media industry. I would like to have the benefit of your insights and experience. It is hoped the findings will help improve policy making in future.

I have attached a summary outlining the basis of my study and an outline of the topics I would like to cover in the interview. It should take about an hour.

With your permission, I would prefer to identify you as one of the interviewees for the study. Should you wish, however, all or parts of your input can remain anonymous for five years from 2004. Either way I would also like to tape record the interview to facilitate accuracy. I would like to provide you some time after the interview with a draft of the relevant section of the thesis for you to check for accuracy.

I am available at your convenience and can be contacted at the numbers and e-mail above should you agree to an interview.

Thank you in advance,

Colm Murphy
Subject leader in Media, Film and Journalism

Encl. Research summary X 1.

Outline of topics for discussion X 1.

Appendix E: Template for Freedom of Information requests

School of Media, Film and Journalism
University of Ulster
Coleraine
BT52 1SA

Tel: 0044 28 402 0000
E-mail: c.murphy@ulster.ac.uk

Date:

FOI officer name
FOI officer,
address

Ref: FOI Request for records relating to

Dear FOI Officer,

In accordance with section 7 of the Freedom of Information Act 1997, I wish to request access to the following records which I believe to be held by your body:

1. Records sought: All records relating to [insert details] created by your body between [insert dates].

2. Format: My preferred form of access to these records is to receive copies by post or view the original records.

3. Charges: To determine my status for fees you should know that I am planning to use the information for a PhD thesis which will be publicly available. It should increase the public's understanding of an issue of national importance, Ireland's policy making process. It may thus qualify for exemption or reduction in fees under Sec. 47 of the FOI Act, 1997.

4. Sent to: Colm Murphy, School of Media, Film and Journalism, University of Ulster, Coleraine.

Many thanks in advance,

Colm Murphy

Appendix E: Activities which qualify for the 10% tax rate and state support (2002).

- Manufacture of goods in Ireland.
- International financial services activities carried on at the International Financial Services Centre, Dublin.
- Certain computer services (software development, data processing and related technical and consultancy services) which have been grant aided.
- Design and Planning services rendered in Ireland in connection with specified engineering works executed outside the European Union. This applies to services provided by Engineers, Architects and Quantity Surveyors.
- Repair or re-manufacture of own manufactured computer equipment.
- Repair of ships, aircraft and aircraft engines or components.
- Certain shipping activities.
- Production of qualifying films (movies).
- Fish farming, meat processing, micropropagation and cloning of plants.

Source: IDA Ireland, 2002.

Appendix G: List of interviewees and briefings attended by author

- | | | |
|----------------------------------|-------------------|---|
| Interviews* | | |
| 1. | Seamus Gallen | Executive of the National Software Directorate, September 2000 at Enterprise Ireland headquarters, Dublin. |
| 2. | Colm Regan | Executive director, Forás, July 2000 at Forás, headquarters Dublin. |
| 3. | Charlie Pritchard | Dublin Institute of Technology, director of its Digital Media Centre, December 2000 at Dublin Institute of Technology, Aungier Street, Dublin.. |
| 4. | Billy Morrissey | Communications Development section of the Department of Public Enterprise, July 2000 at Department of Public Enterprise, Dublin. |
| 5. | Joseph Gallagher | Communications Development section of the Department of Public Enterprise, July 2000 at Department of Public Enterprise, Dublin |
| Briefings attended | | |
| 6. | Bob Herbold | Chief operating officer, Microsoft, Seattle, September 2000, Dublin at Microsoft headquarters, Sandymount, Dublin. |
| 7. | Dan Flinter | Chief executive Enterprise Ireland, October 2000 at Enterprise Ireland headquarters, Dublin. |
| 8. | Jennifer Condon | Director, Informatics Directorate, Enterprise Ireland, September 2000. At Department of Foreign Affairs, Dublin. |
| Phone interview briefings | | |
| 9. | John Rutledge | Intellectual Property Rights' Unit, Department of Enterprise, Trade and Employment, October 2002. |
| 10. | Gerry Clarke | Enterprise Ireland executive in digital media unit during 1990s, May 2000. |
| 11. | Donal Denham | Assistant principal officer in charge of service sector policy in Department of Enterprise, Trade and Employment, November 2001. |

* Excludes those held with executives in case study companies which were held throughout the case study period.

Appendix H: Time line of digital media advances

1958: US Department of Defense forms the Advanced Research Projects Agency (ARPA) which developed a pre-cursor to the Internet.

1971: The microprocessor - the key device in spreading micro-electronics, was invented and diffuses in the 1970s.

1974: TCP/IP protocols that run on the Internet introduced.

1977: Apple 11 computer introduced.

1980: Compact Disc

defined by Philips N.V. and Sony Corporation.
Global standard for medium to play music.

1982: ARPANET, the forerunner of the Internet, spun off from military system for academic use.

1983: CD-ROM (Compact Disc-Read Only Memory)

Philips and Sony in 1983 announce the new standard to allow digitized content benefit from the capacity, durability, and economies of scale that were rapidly making compact disc audio a global success.

ISO 9660 standard adopted by developers making CD-ROMs universally compatible across DOS, Windows 95, UNIX and Apple platforms. Format goes into international production in 1986.

1990: The first World Wide Web server goes into operation.

1991: First commercial Irish Internet Service Provider established from academic institute.

1991: Trinity College, Dublin, multimedia centre established.

1994: CD-Re-write able (CD-RW)

Philips and Sony

1995: Traditional online dial-up begin to provide Internet access

1995: Digital Versatile Disc

Toshiba, Matsushita, Sony, Philips, Time Warner, Pioneer, JVC, Hitachi, Thomson, and Mitsubishi launch universal standard for higher capacity digitalised storage and integrated the consumer electronics and computer markets.

Source: Guenette, David R.; Parker, Dana J (1997) –The family album; genealogy of the CD family of products”, in EMedia Professional, No. 4, Vol. 10; Pg. 30.